No. 46.

No. 46.
"

Field Book
of
W. L. Jepson

If lost finder please return to W. L. Jepson, Department of Botany, University of California, and receive reward!

It is valuable only to the owner.

11 Mosswood Road, Berkeley, California.
1927.

No. 12,127. Eriophyllum
Santa Barbara

No. 12,128. Salvia leucophylla
Greene. Santa Barbara. Cor.
pink. Bush 4 to 6 ft. h., many-
stemmed.

No. 12,129. (Discarded, insect damaged)

Bush, woody, 3 to 5
ft. broad, 2½ to 3 ft. h.

No. 12,130. Malacothrix saxatilis
var tenuifolia. Many stemmed cichori-
aceous "bushy" plant, 4 ft.
h., the stems many from
the base. Stems very leafy,
branching sparsely above,
the heads scattered.

No. 12,131. Convolvulus cycla-
stegius House. Trailing. Cor. white

No. 12,132. Gilia gilioides Greene
= Allophyllum glutinosum
Var. glutinosa. Stems few or several,

forming a very sprawling plant,
the plant very open, one stem
erect, 2 or 3 reclining, one or
two ascending.

No. 12,133. Phacelia grandiflora
(Bth.) Gray. Very showy; pale blue
corollas. Broken ground.

No. 12,134. Lotus grandiflorus
Greene. 2 ft. h. Many stemmed.

No. 12,135.
Woody composite bush,
3 to 4 ft. h. Loose outer
spreading bracts of the head.

No. 12,136. Ceanothus spinosus
Nutt. Shrub 8 ft. h. Spines
mostly back on older wood
than that of season; spines perhaps
resulting from hardening and
defoliation of short leafy
branchlets of season.

San Marcos Pass

Santa Inez Mts

No. 12.137. Graphalium californicum
Bush-like, 6 ft. broad, 3 ft. h.
this one stem representative of the many from the central stock.
↑arising

No. 12.138. Helianthemum scopparium Nutt. var. vulgare Jepson.
Very bushy and spreading. Stamens 19, 21, 24.
↑and dense, and

No. 12,139. =Lepechinia Sphacele calycina Bth.

No. 12.140. Rhamnus californica Esch.

No. 12.141. Collinsia heterophylla Graham.

No. 12,142. Salvia spathacea Greene.

=Horkelia cuneata ssp. puberula

No. 12,143. Potentilla lindleyi Greene var. pubérula Jepson.
At foot of San Marcos grade, n. side San Marcos Pass, in a flat in chamiso. Petals linear-lanceolate, white. Stamens 10 — 5 of them

Santa Barbara Co.

long, 5 short, all with lanceolate-dilated filaments. Sepals very prinkly and closely reflexed, the sepals spreading a little between them.

San Marcos Pass

- Ceanothus spinosus, 14 ft. h.
- Scrophularia californica 8 ft. h.
- Salvia mellifera
- Dendromecon rigida Bth.
- Acer macrophyllum.
- Salvia apiana
- Rhatinia arbutifolia Lindl.
- Prunus ilicifolia
- Thurbellularia californica

- The ride from the foot of the San Marcos grade through the San Marcos Ranch is very beautiful and very interesting. It is the cañon valley of the Santa Inez river but is

wonderfully diversified; lovely oak-filled valleys, the Quercus agrifolia very fine in their undisturbed natural condition; lateral spurs running to the river; a fine view of the very enticing and unique foothills of the San Rafael Range on the other side of the river. From a vantage point I obtain a good view of these divine hills and white cliffs and the mountain country stretching up behind them.

Populus trichocarpa is along the river (Santa Inez). I drive westerly to Santa Inez village, then Los Olivos, Los Alamos, and stop all night at an auto station where the branch road goes off to Lompoc.

In the valley of the Santa Inez River, not many miles after quitting the foot of the San Marcos grade, on the San Marcos Ranch, I collect on a chamiso flat the following:

No. 12,144. Verbena prostrata R. Br. Santa Barbara Co.

No. 12,145. Pentstemon heterophyllus Lindl. Quite erect, woody below. Cor. blue.

No. 12,146. Diplacus

No. 12,147. ~~Godetia~~ Clarkia (cylindrica) dudleyana Abrams. Mod. Grassy banks = G. cylindrica Heck.

Santa Maria to Cuyama Valley
May 30, 1927

No. 12,148. Salvia leucophylla Greene. Santa Maria. Corolla pink. Upper lip 2-lobed at apex, the lobes a little broader than the (2) lip, that is dilated and overlapping a bit. Lower lip: 3 lobes linear-oblong, the middle one a little longer; upper lip erect, notched.

2 upper stamens reduced to short sterile filaments set in the sinuses between the two lips. Cor-tube with a dense ring of spreading hairs above the middle. Calyx-tube a little curved outward, spathe-like, with oblique orifice, as if composed of 2 lateral units.

This shrub forms colonies of 3, 5, 10 acres in the hills on steep westerly or northwesterly slopes.

where the conditions are just right for it, it forms pure colonies, pure stands sharply defined against grass land. E. of Santa Maria 4 or 5 miles. It also occurs, further on, scattered through the chaparral or chamise, over hundreds of acres, as occasional plants, or even becoming the dominant. Near the Alamo Creek bridge, tributary of the Cuyama River, is a hill with a west slope of 40 to 45 o/o where it makes a great colony with oak scrub scattered through it. No. 12,148 collected 4 or 5 mi. easterly from Santa Maria. Tends to give a gray tone to slopes for many (miles?)

No. 12,149. Elymus condensatus Prest.

This reed grew by the grade not far from Huasna Creek.

San Luis Obispo Co.

Pioneer Park, Cuyama River

— Baccharis pilularis
— Glycyrrhiza lepidota Pursh.
— Sambucus glauca
— Quercus agrifolia

We (the car and I) run on up the Cuyama River. The way is by high grades above the river to get over side spurs and ridges. There is no way along the river bottom or cañon bottom. The mountain configuration is such that I regard it as one of the most interesting mountain trips in California. We go up the Cuyama River to Cuyama Valley but do not pass over any divide. Cf. p. 14.

c. 1600 ft. } On grade from Pine Creek bridge easterly towards Cuyama Valley

30 May '27.

N. Santa Barbara County (See p. 88)

No. 12,150. Bloomeria

Dry grassy slope. About 2 miles easterly from Pine Creek bridge.

No. 12,151. Lupinus densiflorus

With 12,150.

No. 12,152. Clarkia Godetia cylindrica Hitch. (Jeps.) Lewis & Lewis

With 12,150.

No. 12,153. Eriogonum fasciculatum var. foliolosum Mountain slope, about 5 mi. beyond Pine Creek bridge.

No. 12,154. Pentstemon cordifolius Bth.

With 12,153.

No. 12,155. Chorizanthe staticoides Benth.

Stem parting into widely spreading or divergent branches forming a flattish-topped plant which is low. Dirt slides. About 6 mi. beyond Pine Creek bridge. Petals ovate, 1/2 as long as ovate sepals. Perianth white.

No. 12,156. Amorpha californica Nutt.

About 7 mi. beyond Pine Creek bridge.

No. 12,157. Astragalus. See bottom p. 12.

Cuyama Valley, SE. San Luis Obispo Co. May 30, 1927.
1500 ft.

No. 12, 158. Cryptantha muricata Nels. & mcbr. In a moist spot in a little wash, west end Cuyama Valley.

No. 12, 159. Oenothera micrantha Harvey. With 12, 158.

No. 12, 160. Lotus salsuginosus Greene. With 12, 158

No. 12, 161. Eriogonum fasciculatum var. foliolosum Ante erect from woody base. Center of Cuyama Valley.

No. 12, 162. Stanleya pinnata Britt. With 12, 161.

No. 12, 163. Eriogonum gracillimum With 12, 164.

No. 12, 164. Nicotiana bigelovii Wats. East end Cuyama Valley.

No. 12, 165. With 12, 164.

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cont. from p. 11.

Astragalus antisellii Gray. no. 12, 157. grassy slope, open woods, opposite Brown Cañon.

The west end of the Cuyama Valley has Quercus lobata on its floor. These trees become more and more scattered as one goes eastward and disappear as the true aridity of the valley becomes established. It is however strange to see the colonies of Tessaria borealis (=) in the same corner of the valley as this oak. Quercus agrifolia is here at first, and of course Q. douglasii.

Just before reaching the valley of Cuyama a very prominent thumb-like peak appears on the other (n.) side of the Cuyama River. Most remarkable strata crop out; a great red cliff, narrow and squarish, is striking.

No. 12, 165a. Mentzelia Seed.

Cuyama Valley, May 30, '27.

It is a divide of low hills that separates the Cuyama Valley from the San Joaquin Plain. The Cuyama River has a remarkable flow for a creek in this dry country. It must have its sources in the high range southerly, because the dry hills separating the valley from the San Joaquin give no flow of water or springs. There is a great mountain lying southward from Maricopa which I take to be San Emigdio Mt.

I cross the divide, camp at Maricopa. The next morning I see through the haze the great summits of Tehachapi far to the southeast.

Maricopa, May 31, '27.

Kern Co. 1000 ft.

No. 12,166. Thelypodium sagittatum (H.&A.) Greene. Common on the flats. — Maricopa is a good deal like a mining camp, only the "gold" is oil as testified by the forests of oil-derricks about the place. I drive to Taft which is a solidly built city in its business blocks, its public buildings and tasteful homes. The forest of oil derricks is more extensive. I drive, still northerly to McKittrick, a much smaller oil center, not as large even as Maricopa; go on northerly and in the neighborhood of Lost Hills (not westerly) I collect on the dry plain*: [See also p. 26.]

No. 12,167. Hemizonia pallida Keck. Becomes 2½ ft. h.

No. 12,168. Eurotia lanata (cf. no. 16,243) 20 in. h., round headed bush.

* Antelope Plain.

Devils Den, Kern Co., (road sta., W.)

"No. 12,169. Eastwoodia elegans det. RCB. 1953 T.S. Bdq.

Bush, roundish, 2 ft. h. Last Hills (westerly from), on Antelope Plain.

— I drive on northerly over the dry brown parched plain, low hills to the east, separating the San Joaquin Valley floor but so low, flat, you have to look for them; the Coast Ranges, dry tawny, low, on the west. North of Devils Den I collect:

"No. 12,170. Hemizonia (Centromadia) pungens (H. & A.) T. & G. Becomes 1½ ft. h.

"No. 12,171. Datura meteloides DC. 8 mi. n. of Devils Den.

— I drive north and cross an east and west road (Lemoore to Chalame). Near this point, about 1 mile north, I stop and collect on the dry sandy plain: Kettleman Plain: 500 ft.

"No. 12,172. Gilia dasyantha Brand. Eriastrum pluriflorum See p. 76 at bottom

Kettleman Plain, Kings Co. 17 500 ft.

"No. 12,173. Eriogonum viridescens

"No. 12,174. Hemizonia kelloggii Greene

Some miles after this I pass a well-built well-kept oil plant in the low hills, very neat and very active, but no sign on it. The Kettleman Hills, a long low range have been for some time on the east, and I have been driving over the Kettleman Plain. All these hills are very dry, the dead grass standing thick and brown or tawny in this dry season, but the result of a heavy winter rainfall. I come next to the Fresno County line. All this time since McKittrick, and especially since Blackwell's Corner north of McKittrick, I have been traveling over a wagon trail, the road just

Cont. p. 26.

about as nature made it. When I strike the Fresno County line there is an oiled road and I go bowling along to Coalinga. In the valley, about 2 miles this side of the town I stop in a creek bed (Jacalitos Creek) and collect a cedar-like composite 6 ft. h. I take also a spm. of the trunk: viz.,

No. 12,175: Baccharis sarothroides Gray. Jacalitos Creek. See p. 27.

No. 12,175 a. Mentzelia Discarded Coalinga.

— I pass through the town and its city-like blocks of oil wells beyond, and enter the cañon of Los Gatos Creek. The road crosses the stream, or it may be said to follow the stream bed, but going out on a bank or bench for a short distance, crossing the stream bed a wearying number

of times. At its lower part I stop to make camp, in the bed, under a Populus Fremonti tree, to get supper. Here I collect:

No. 12,176. Eriodictyon tomentosum Bth. It is quite common a long distance up Los Gatos Creek.* See p. 64.

I break camp in a little over an hour and go on in the early evening, up stream, collecting as I go:

No. 12,177. Lonicera
A shrub 4 ft. h.

No. 12,178. Calochortus
Blue Oak country. Dry grassy slope.

No. 12,179. Clarkia elegans Dougl.
Blue Oak country. Dry grassy slope

No. 12,180. Delphinium Parryi Gray.
Det. RB 7/21/54 Var. seditiosum (Jepson) Ewan

* Remarkable for its small white somewhat unshaped corollas. Bees work it on Lorenzo Creek.

Divide at head of Los Gatos Creek, 3000 ft.

No. 12,181. Pentstemon heterophyllus Lindl. June 1. With 12,178

I drive on up in the dusk, the way over a thin mountain-road trail, very trying, and stop for a night camp on the divide, open oak-covered country, that is, scattered Quercus douglasii and Pinus sabiniana and a little Aesculus californica. The soil is a clay, whitish or at least light-colored, which has checked into [irregular] quadrilateral or octagonal patterns, a huge "tessalated" floor. The collecting here is good, although the checks or cracks in the soil are 1. to 1 1/4 in broad and 1 to 1 1/2 ft. deep, possibly more, the

June 1, 1927

plants now in anthesis, flourish.

No. 12,182 Stylocline filaginea Gray

This cephaloid plant covered an area on the slope (in the dry checked clay just described) some 30 feet square without admixture and elsewhere associated with grasses. The achenes and flowers have fallen and I am struck by the fire-rayed "stars" formed by the perfectly spreading bracts of the involucre. These involucres have developed a spine at tip which is hooked and so grabs on to clothing or hair. But there is no "use" in this, to serve the plant because the fruits are all gone and the plants stand erect and perfectly dry and dead, mere signs of what they once were.

Divide at head of Los Gatos Creek, 3000 ft.

No. 12,183. Bromus arinarius Labill.
This grass frequent.

No. 12,184. Microseris douglasii var. douglasii Dry cracked soil as noted on p. 21

No. 12,185. Acanthomintha obovata Jepson. Corollas white. Dense colonies of it, 50 × 80 ft. 3 of them, on the cracked clay (see p. 20), the soil now remarkably friable!! See also p. 39.

No. 12,186. Euphorbia dictyosperma E. spathulata Lam. Fisch. & M. Note the red stems and warty fruits. In same soil type as 12,185.

No. 12,187. Poa scabrella (Thurb.) Benth. ex Vasey (det. Beecher Cramptan, Nov. 1925)
This grass grew in clumps.

No. 12,188. Delphinium
Flowers white. Same soil type as no. 12,185.

June 1, 1927

No. 12,189. Lupinus
Corollas pink, at base. The only spikes seen were so. Nearly all the plants out of flower. Common on the slopes of the little barrancas that run down from the divide.

No. 12,190. Asclepias californica Greene. On the ridge of a little hill where the rock strata outcrop a very little.

No. 12,191. Calochortus splendens Dougl. The perianth cup seems full of soft hairs, which spread evenly from the lower half or so of the petals. The gland, at first white, is soon lilac-purple, and like a low round coralline mound, the processes or hairs being very densely and shortly branched. Not common. Petals a Godetia lilac.

Divide at head of Los Gatos Creek, 3000 ft. (and branch of San Benito River).

No. 12, 192. Allium crispum Greene (det. RCB; Feb. 1964) In dry soil under oaks.

No. 12.193. Chorizanthe membranacea Benth. Dry soil

No. 12, 194. Gilia mitracarpa (Greene). = G. Jaredii (East W.) acc. V. L. B.

No. 12. 195.

This grass in stools, small ones, forming colonies but the individuals scattered.

No. 12.196. Rhus diversiloba T. & G. Its foliage so lobed as to be remarkably like the Valley Oak.

No. 12, 197. Lomatium vaseyi C. & R.

No. 12, 198. Achryachaena mollis

Poor specimen; discarded — LRH in 1965

— Yucca whipplei Its plumes are abundant on the mountain sides of lower Los Gatos Creek.

W. Fresno County. June 1, 1927

This camp is a sleeping or overnight camp. The country is too dry for me to build a fire this morning — and too much breeze. The night was quite calm, a clear sky overhead, no sound in the woods save the low soughing of the wind. This morning is beautiful, quiet and peaceful with only the (cont at *) I can look down the long winding canon which I came up yesterday afternoon, out into the vague misty reaches of the bowl of the San Joaquin Valley.

The soil conditions here, the little ridges, barrancas, slopes, as the hills fall off below, the colonies of various species so pronounced make this an interesting locality. Such places I leave with regret. I start down grade westerly.

* soothing croon of the turtle dove.

The way down from the divide (see p. 25) is a pleasant one through rolling Blue Oak country. In about a mile or perhaps much less I stop, put up a tent and number up yesterday's specimens. [Insert from p. 128.] At this point a wagon trail leaves the main track, running southerly through the hills. It goes to Priest Valley

Cont. p. 27 *

– Cont. from p. 15 at *

– Salvia carduacea I note. Also Eremocarpus setigerus.

– Cont. from p. 17. North of this oil plant I see on the high hills west a zone of what looks at this great distance Juniperus californica. It is below the summit, this zone, and the zone which is horizontal, is interrupted, so

as to make a series of colonies. The patches look like serpentine outcrops.

– Cont. no. 12,175. This bush is also common in the lower part of Las Yatas Creek. See also p. 47

* In about a mile more (see p. 26) I come to the narrow valley bed of the San Benito River which here comes in from the north [river and streams on] flows westerly. It is a good living creek with pleasant reaches of water – very different from the arid eastern slopes of the inner Coast Range [only a few miles away.] I stop for a few minutes at the Henry Treat Ranch and talk with a Mrs. Mitchell, the Mitchells evidently being tenants. Here and near this place I collect nos. 12,199 to 12,202.

Upper San Benito River, 2900 ft. June 1, 1927.

No. 12,199. Eschscholtzia californica Cham. Valley flat at Henry Treat Ranch. The Mitchells rent this place.

No. 12,200. Allium amplectens Torr. det. M. Dunbery 1950. This covered closely an acre of slope just above the river bench near the Henry Treat ranch.

No. 12,201. Argemone munita Durand & Hilg. Near Treat Ranch.

No. 12,202. Acanthomintha obovata Jepson. Near Treat Ranch

No. 12,203. ~~Hemizonia~~ Lagophylla ramosissima Nutt. Dense colony on sharp hill slope near river.

No. 12,204. Pentstemon centranthifolius

No. 12,205. Psoralea californica Wats. Gravel flats by river. [See p. 128]

No. 12,206. Asclepias californica Greene. Stems several from the base, reclining or decumbent. Hoods to column none.

No. 12,207. Sambucus Tree 12 to 15 ft. h., remarkable for its small flower clusters. Along river.

The first marked ranch below the Treat Ranch is J. W. Boutell and Sons. On the L. side of the stream in a noticeable Quercus lobata glade on a bench.

— One continually fords the river breaking out on the little benches between the bends. Finally I come to the large tributary of Clear Creek with a living stream. Here there is a road branching to Alpine Mine and Idria. Now I am in Hernandez Valley, pass the Erie School, and lower down a better type of ranch sets in a great grove of Quercus lobata. — Cont. p. 32.

Hernandez Valley, June 1.

2430 ft.

No. 12, 208. Delphinium Parryi Gr. var. sedibirsum (Jeppson) Steep hill slope.

No. 12, 209. Calochortus venustus Dougl. Steep hill slope.

No. 12, 210. Senecio breweri Gray. Hill slope.

No. 12, 211. Cirsium Fls. white. Valley flat. Mitchell Valley

No. 12, 212. Convolvulus vitosus Gray. Mitchell Valley Dry ground.

No. 12, 213. Collinsia bartsiaefolia Bth. var. Steep bank, wooded country. San Lorenzo* Cr.

No. 12, 214. Agoseris San Lorenzo Creek*

No. 12, 215. Cirsium San Lorenzo* Cr. Fls. white

No. 12. 216. Cirsium San Lorenzo Cr*. Red

See * p. 31

San Lorenzo* Creek

Upper San Benito River, June 1, '27.

flowers.

No. 12, 217. Ceanothus integerrimus H. + A. var. integerrimus This grows associated with Pinus sabiniana and Quercus lobata – but the latter is the var. Walteri form! which grows at higher elevations than the usual form. I do not before recall this Ceanothus in association with plants of the woodland upper Sonovan, though I might have seen it in the chaparral upper Sonovan. San Lorenzo Cr.

No. 12. 218. Phacelia imbricata Greene. Wooded bank. Lorenzo Creek.

= P. calycosa (Gray).

* This name should be Lorenzo Creek, not San Lorenzo. There

Lorenzo Creek, San Benito Co.

is a San Lorenzo Creek over west which heads in Peach Tree Valley. Lewis Creek runs into it. This San Lorenzo Creek is properly designated on the U.S. topographic map. It goes into the Salinas. But Lorenzo Creek is a small winter stream. It empties into the San Benito River not far from here. It was named after the Spanish settlers that were first resident here, especially one of them, namely Lorenzo Vasquez, acc. Daniel Rolvaag. See p. 30.

Cont. from bottom of p. 29.

I climb the grade to the next valley, which lies higher, where is Hernandez P.O. and the Mitchell Ranch, wherefore I call it Mitchell

Valley, being a very distinct little valley with fine Quercus lobata trees scattered over it. Coming up into this valley from Hernandez Valley I collect near the summit and on it nos. 12,208 to 12,210. In Mitchell Valley nos. 12,211 and 12,212. I climb up out of Mitchell Valley and just over the summit on the down grade there is a fine wooded country with considerable flowering. I collect nos. 12,213 to 12,217 and lower down 12,218.

I stop at the Bettys Ranch (cf. p. 68.) and make the acquaintance of Daniel Rolvaag. He was born in Priest Valley and evidently spent all his life in this region. There was no one at the cottage of Mrs. Julia Bettys when I arrived but soon he appeared on the scene, dressed roughly like

a mountaineer with a six-shooter slung at his belt. He says.- "I have caught two mountain lions in lion traps. They are not easy to catch. One must use strictly fresh bait. A lion may break the chain of the trap but usually they do not struggle much. When you find them in the trap they will not face you. You cannot get them to look at you. They are cowardly brutes. My Airedale dogs will easily tree one. If a lion has gotten out of the trap and he has not a start of over three or four hours the dogs will track him down. Mountain lions kill sheep, deer and colts, less often calves or cows. Cattle tend to protect themselves and their young. Lions will not touch

dead animals. Anything that is tainted they pass by. They make a kill and eat on it one, two or three days and then lie around in the sun in a rocky place for 10 days or so. They are always fat. I have never found one that was lean or scrawny. They cover up their kill when they leave it, a deer or a cow, with forest litter and leaves, to keep off flies, as long as they mean to return to it. No coyote, wildcat or fox will disturb the cache of the lion because they know he is somewhere in the neighborhood and they fear him. A lion may carry off his kill - a deer. I have known a deer weighing 160 pounds to be carried by a lion of 150 pounds; probably over the shoulders as the ground showed no dragging. The

coyote is the smartest of animals. He is difficult to trap but it can be done. I use fresh bait, a squirrel or a rabbit and conceal the trap. Still a coyote may upset the trap and take the bait. A coyote that has been in a trap is not likely ever to be caught again. Still I once caught a coyote that had lost 2 toes in a trap. There was a big coyote that kept spoiling a trap, without getting caught. I noticed that he pawed up the ground with his hind feet about 10 or 12 feet away from the trap and so I set another trap blind at that spot and concealed it thoroughly with leaves. It was two or three days before I went there again but this time I had the big fellow. He hadn't thought about another

trap blind - his mind reckoning only with the baited trap. I have out in the winter a string of traps running over 12 to 15 miles. It is quite a job going over them, especially if it is raining or muddy. There are two coyotes in Hernandez Valley that have been in traps and I have tried to catch them but they won't go near a trap. They are are too smart. I know when a coyote is smarter than I am and so I quit.

No coyote submits tamely to a trap. He fights the trap and pulls loose if he can. He will work at the chain and twist it off if it can be done. Most chains have a swivel but the swivel may get caught or the chain become tangled and then the

coyote has a chance to break the chain by twisting it off. He will leave a foot in the trap gladly rather than submit to capture. He fights trap and man to the least.

Foxes are different. I can take them out of the trap and put them under my arm and carry them home and they will not snap at me. Of course they will snarl when you approach the trap but they are rendered gentle very quickly. I caught two in one trap once. I thought they had stepped in the trap at the same time but as I reflected on it this seemed unlikely. Probably it was this way. One stepped into the trap without touching the plate trigger and stood there eating the bait. The other fox of the pair then came up and stepped in alongside springing the trap.

No coyote will touch a trap bait if he has suspicion. No coyote will touch a cow or steer that has died of anthrax even if freshly dead. Coyotes will eat dead cattle or dead deer that mountain lions will not touch; but by some curious instinct the coyotes knows when a killed or dead animal has a fatally contagious disease."

No. 12, 219: Acanthomintha obovata Jepson. (See p. 67). Colonies right by the cottage of Julia A. Bettys., on the hill slope in the same dry friable clay as no. 12.185 at the divide of Los Gatos Creek.

No. 12,220. Collinsia bartsiaefolia Bth. var. davidsonii Newsom. Corolla white or dull white, the upper lip very short, the two lobes erect, but with the outer margins recurved. Wooded slope, Cont. p. 77.
† Openly

No. 12,221. Lagophylla dichotoma Benth.

Rays 5, yellow, broad, 3-cleft, spreading horizontally. Hill slope, dry cracked clay. Colonies.

No. 12,222. Microseris linearifolia

Heads 2½ lines broad, yellow, the lanceolate tips of the bracts of the involucre spreading star-wise about the head, these tips lanceolate, ascending (not horizontally spreading from the ligulate head). Wooded hill-slope.

No. 12,223. Hesperolinon disjunctum H.K. Sharsm. ined. ~~Linum californicum Benth.~~ (June 1959) Petals pinkish white. Sepals glandular-ciliate, on inside finely of margin in such a way as not to be noticed from the outside.

No. 12,224. Navarretia mitracarpa Greene. Forming colonies on the same hill slope as 12,219, same soil conditions. = N. jaredii Eastw. (acc. V. L. B.).

No. 12,224a. Orthocarpus parparascens ~~densiflorus~~ Bth. (Seed.)

– Fremontia californica occurs on headwaters San Benito River acc. Mrs. J. A. Bettys.

Upper San Benito River near Lorenzo Creek. 2000 ft. June 2, 1927 San Benito Co.

No. 12,225. Apocynum cannabinum L. Bed of the San Benito River. 3 ft. h.

No. 12,226. Cyperus Forming heavy stools in the river bed.

No. 12,227. Scirpus Forming dense colonies or patches in the river bed.

No. 12,228. Cotyledon laxa B. & W. = Dudleya caespitosa Petals a pale somewhat buckskin color. Face of rocks by river.

No. 12,229. Ceanothus cuneatus Nutt., but a peculiar slender form. Many-stemmed bush 14 ft. broad, 7 ft. h.

No. 12,230. Clematis lasiantha Nutt.

No. 12,231. Rhamnus ilicifolia (Kell.) C. Wolf Shrub erect, 6 ft. h., one stem clearly at ground (6 in. diam.) but at once branching into 3 or 4 erect branches. Flower with just the same structure as the bush noted on Santa Cruz Island a few days ago, the same very acute lanceolate sepals and same color. cf. p. 69, infra.

No. 12,232. Calochortus splendens Dougl. River bench where protected a bit by plants scattered shrubs or bushes. Petals lilac, maturing pink.

No. 12,233. Clarkia unguiculata elegans Dougl. The four long crimson anthers of the long stamens open only by a pore beneath the terminal appendage. The four short

stamens have white anthers that open their full length. Each and every filament has a tuft of hairs at the base so dense that there appears to be a ring of hairs at the throat. Below this, in the cup, there is another ring of hairs, very distinct but not so dense. I worked on this species in a colony under a Blue Oak tree where the slop slope was covered with leaf mold. Bees are visiting the flowers. The bee alights on the protruding white style and the stamen cluster and hangs on in this way. The petals spread in pairs left and right and do

not interfere with his entering into the flower from above or swinging freely his body downward. Apparently he feeds on the freely exposed pollen masses of the short (white) anthers, his body with its hairy under surface resting on the long anthers and the hairs undoubtedly flecking up pollen from the the long (crimson) anthers. These anthers have the pollen so disposed he could not easily feed upon it, but this pollen carried by the under parts to another flower would be thrust directly against the stigmas of the protruding style which stands directly in the way.

Upper San Benito River near Lorenza Creek

No. 12,234. Glycyrrhiza lepidota Pursh. River bench.

No. 12,235. Cirsium River bench. Heads crimson. 2 to 3 ft. h. Humming birds visit the heads.

No. 12,236. Eumenanthe brunnea Jepson n. sp. See p. 202.

No. 12,237. (Discarded, insect damaged) Iva River bench.

No. 12,238. Navarretia mitracarpa Greene. Prostrate or nearly so. Bees work this species freely says Daniel Rohrback. River bench. = N. jaredii Eastw. !!

No. 12,239. Lupinus densiflorus Benth. Flowers pink. This grows very densely in the hayfields sometimes, where little hayfields on the benches in the bends

2000 ft. June 2, 1927 San Benito R.

of the river. A quarter of a ton was harvested from one of these little fields, says Daniel Rohrback, and the seed used for chicken feed. The poultry thrived on these seeds and were plainly stimulated in egg production.

- Aesculus californica is just coming into flower and the bees are just beginning to work on it.
- Photinia arbutifolia.
- Quercus lobata, agrifolia, douglasii.
- Populus Fremontii.
- Yucca whipplei.
- Marrubium vulgare.
- Erodictyon (same as no. 12,176.
- Cedar-like Composite, same as no. 12,175.
- Heliotropium curassavicum.
- Pinus sabiniana.
- Verbena prostrata — common! in fl. now.

Lorenzo Creek, upper San Benito River

As Daniel Rohrbach and I came back to Lorenzo Creek from the San Benito River he called my attention to a newspaper tied by one corner and hanging from a bush. He asked me to guess what that meant. I replied that I might guess a long time without hitting it, that I didn't even know where to begin. It seems that a turkey had hatched out a brood of young ones and started to stop out all night with them under this bush. Rohrbach did not have time to drive the turkey family home and so he

tied a newspaper to the bush. No coyote will go near a trap with a newspaper tied on it- so. He will come around within 20 or 30 feet and sniff but he won't venture near the newspaper. He knows it is a device of man, and for all devices of man he has a righteous horror. He suspects the worst — a trap! and stops carefully away!!

Daniel Rohrbach says: "Bill Folks was out in the hills one day and his dogs cornered a mountain lion. The dogs had had him bayed for some time. It was a terribly hot day and when Bill came up he was nearly dead for water, but (Bill) there was no water around. Then he noticed that one of the dogs

Lorenzo Creek, upper San Benito River

was gone, leaving two dogs on gaurd and when this third dog came back another dog went off, leaving two at work worrying the lion as before. The dogs were taking turns going off for water. They knew where there was a spring! and being able to spell each other thus had the advantage of the lion who was becoming terribly heated. Folks had no gun but he cut a heavy limb from a tree with his knife and made a club. He then waited for an opening with all three dogs ready. When he hit at the lion, the lion came for him and scratched up his arms badly but he got in his blow but it didnt stop the lion. The dogs closed in on the lion when they saw Bill go for him. The lion

[Cont. p. 51]

2300 ft. June 2, 1927. San Benito C.

No. 12,240. Daucus pusillus Michx.
Lorenzo Creek. Common.
No. 12,241. Bloomeria aurea
Upper San Benito River.

cont. from bottom of p. 50.

after jumping at Bill started to crush one of the dogs. Bill then used all his strength to save the dog and hit the lion a fearful blow on the head and knocked him out. He was a very fat fellow. Bill was pretty near done up but he followed one of the dogs to the spring, and got water. Then he came back and skinned his lion".

Rohrbach says lions are always fat; that he never yet killed a poor lion. Mrs. Julia Bettys tells me that Rohrbach has killed seven lions. It seems characteristic of the man that he did not speak

of this himself.

Ben Williams was one of the early settlers in Priest Valley. He owned a famous race horse Red Bird. One day Bill was out in the hills when he started up a lion. Bill was walking Red Bird slowly, but the lion was so startled that the beast of prey started to run. Well a lion can run. So Bill, having no gun started after him with a yell, just for the fun of the race. Red Bird thought it was a race, too, and let out but he didn't know it was a lion. The lion had quite a start up the trail and then went over a little rise and down into a gully. Old Bill was gaining on the lion on the down grade of the trail. By (urging Red Bird and Red Bird was)

this time Red Bird had gotten pretty near the lion - near enough to smell him, to scent him, - and Red Bird, suddenly stopped, threw Bill, who was bending forward and urging on the race, over his head into the brush, whirled and went back up the trail as fast as he could go. Old Bill was a bit stunned and scratched but he knew enough to see Red Bird disappearing over the rise with his tail in the air, and in the other direction the lion (who had become somewhat winded with his tail flopping) go over the rise in the other direction with his tail swinging left and right! - Daniel Rohrbach told me the above story with evident relish.

Daniel Rohrbach was out one day and the dogs started a lion. The

lion was making it too hot for the dogs. Rohrbach had no rifle but he got a chance and shot the lion through the head with his six-shooter.

The coyotes take the kids and turkeys so quickly that Mrs. Julia A. Bettys who is most tender-hearted to all living thing and cannot bear killing was forced to set traps for the coyotes. She caught a coyote near her yard but was unequal to killing it. She called in a passing Indian. He looked around and got a club and started for the animal. Now the coyote knew, as well as I says Mrs. Bettys, what was to happen to him. He knew that he was to be killed, that death was his; and so he sat back on his haunches,

lifted his head and let out the most doleful and prolonged moaning howl.

– At Charley Miller's place in the valley this side of Hernandez Valley the Miller's raise turkeys. They had forty last year. The coyotes took all but 16. The coyote is a true American and likes the national bird as well as the rest of us. He likes him so well that he doesn't stop to roast him or prepare him. He takes him au naturel. Then Daniel Rohrbach got busy and caught (say twelve) coyotes at the Miller place. There have been no turkeys lost in that valley since. However though Rohrbach cleans the coyotes out pretty well, they are plentiful enough one season next season, with the dam giving 7 to 9 in a litter, they soon restock the country.

– Eagles are pesky birds in this region. They kill lambs and carry them off. They kill calves, first blinding them by striking out their eyes. Daniel Rohrbach caught an eagle and a wild cat in one setting. Undoubtedly says Daniel, it happened in this way; the wild-cat took the bait and was caught in the trap, then the eagle started to worrying it and got caught. [I do not remember accurately Rohrbach's statement as to this. It may have been just the reverse. It would seem to me more likely that the eagle was caught and then the wild-cat, starting to worry the eagle, was not careful about the other traps of the setting and so stepped in one and thus Daniel

found a very unlike pair when he came around.

Daniel Rohrbach has much sense of humor. He conceived the idea of soaking corn (?wheat) grains in whiskey and feeding to quail, so that the birds might be picked up when drunk. The quail refused the grains (too large?). When the grain was fed to poultry many were visibly affected.

– Frank Alvarez is a collector of Indian utensils and equipment. He lives in Bitterwater Valley.

– The Duckworth's are half-breeds that live on the North Fork Lewis Creek.

– On the West Ranch there is a talc outcrop, with Indian pictures on it and Indian mortars. Daniel Rohrbach suggested, humorously, that the mortars were licked out by the squaws, [cont. p. 63]

Upper San Benito River to Rabbit Valley, San Benito Co.

c. 1700 ft.

– Left the Bettys Place at 8.00 o'clock this morning, June 3. A few miles down the river, from Lorenzo Creek, we climb out of the San Benito canon. (There is a road see p. 129. down the river all the way to San Benito village but it is a difficult road Passing the summit we soon reach two ranches at the bottom, Ray Eade and the O'Connor ranches. This is now, really, in the Bitterwater, only some low hills separating us from the valley floor of the Bitterwater. We run northerly and in a mile or so the road from Lonoak and Bitterwater joins our road and we make a slight

ascent. This is just the point where I collected Oenothera No. 12,044 (see p. 167, vol. 44). We are now rising out of Bitterwater to a higher level and are in Rabbit Valley. Along the roadway the various Cruciferous plant of the San Bernardino Valley is coming in. It stands 3½ ft. high, bushy in form above the simple stem below. It is my:

No. 12,242. Sisymbrium altissimum L.

We run along in Rabbit Valley, – it is quite barren on the floor and the drainage by a small dry creek cuts across the road and goes westerly over a narrow plain between the hills, this plain extending a long distance wnw. This creek

Rabbit-Valley to Bear Valley
San Benito Co.

must reach the Salinas River. We now pass over an almost level divide (that is the valley floor is continuous northward) and we get another drainage northerly which goes into the San Benito River near San Benito village. This part of the Rabbit Valley is broader and larger. We climb now out of Rabbit Valley over a divide (Bear Valley Road) where there is the fine view of the Pinnacles noted in vol. 44, p. 173 (at bottom), and enter a series of little arms or branches of one valley, (Bear Valley.) barren at first but soon near Cook P.O. with fine groves of Quercus lobata. This is Bear Valley and the P.O. name is now ↑ Cook

changed to "Pinnacles P.O." It was near this point that I collected No. 12,405 Lupinus; see p. 167, vol. 44 (that is Butterfield Ranch). Also at this point no. 12,244. See p. 129.

✓ No. 12,243. Sphaeralcea arborescens (Rob.) Jepson. Cor. pink. Bear Valley. c. 1300 ft.

✓ No. 12,244. Salix exigua Nutt. The willow. used in basketry on the Lorenzo Creek. See above.

✓ No. 12,245. Oenothera contorta Dougl. Sandy soil. Bear Valley. c. 1300 ft.

✓ No. 12,246. Oenothera micrantha Hornem. c. 1300 ft. with 12,245

We run on out of Bear Valley and down a cañon which apparently* drains Bear Valley. I here collect:

✓ No. 12,247. Cirsium heads crimson.

* No! See p. 63

Cañon northerly from Bear Valley in which is a South fork of Willow Creek. See bottom p. 63.

See also p. 156.

No. 12,248. Bloomeria

With 12,247.

Rather common on dry grassy banks and slopes all through this country from the divide at Los Gatos Creek.

No. 12,249. Clarkia elegans Dougl. Very common on wooded banks all the way from Lorenzo Creek to this place, that is the station for 12,247. steep openly

No. 12,250. Stachys californica Bth. = S. bullata Bth.

With 12,247.

When we get out of the cañon noted on p. 61; we pass the station Mulberry (once a post office thinks Mrs. Julia Bettys) and so on to Paicines, Tres Pinos, Berkeley,

[Cont. from p. 57]. so closely does the Indian mortar in the rock resemble the round holes licked out by cattle in rock salt!!

The place in the San Benito River flat, ranch down stream from Lorenzo on the road Creek, just before you turn up the hill, is the Martinini placer. The son now lives at the place. The father was an Italian and the mother an American.]

- Chorizanthe no. 12,052, cont. from vol. 44, p. 182. Perianth white; sepals orbicular-quadratish, petals with finely toothed margin, approximate by their edges to form a crown over the pistil.

- Cont. from * on p. 61. Bear Valley brook drains southerly! We pass over a divide and go down a cañon in which runs a south fork of Willow Creek (emptying into San Benito River) - See County Map of San Benito River (1891). Cont. p. 129.

— Bee feed. Lotus scoparius is an important bee feed in this country. Eriodictyon (same as no. 12,176) tomentosum is also a bee feed here. So is Navarretia (no. 12,238). The bees also work Aesculus californica. The great bee man in this country is Bill Prater. = William Prater. He lives at Tres Pinos, Mrs. Julia Betteys thinks.

— Daniel Rohrbach says there were no brown bear in the San Benito country ever. The only bear was the Grizzly. The Grizzly was very common in early days; then he disappeared very largely. This was due to a migration thinks Rohrbach; on account of repeated oak mast failures. He told me the story of a grizzly in

combat with Bill Folks or Ben Williams. Ben Williams was a squaw man who had come down in early days (say 1851) from Oregon and brought his flat-head Indian wife with him. The last Grizzly was killed in the San Benito country in 1883. Within 2 years Daniel Rohrbach has found the skeleton of a Grizzly but the skull was so far gone that the parts were weakened and disorganizing and was not worth bringing away. "The bones are piled up in the place where I found them and are there yet," says Rohrback. (See p. 73).

— Bill Folk — or Ben Williams was it? — heard a commotion in his corral and went out and found that a colt had been killed. There was no sign of a lion but the kill was

[Lorenzo Creek, upper San Benito River. Cont. from p. 57. June 2.]

recent as the body was still trembling. There had been rain and it was somewhat muddy and the lion tracks showed plainly. He went to the house to get strychnine to put into the colt. When he came back there was no colt there. The colt was gone. He looked around and found it over the fence. The lion had come back, thrown it over the fence and meant to carry it away, when he was frightened off once more. Bill put the strychnine in. The next morning the colt was gone. He followed the trail and found the remains of the colt and the lion dead beside it.

(See p. 73.)

- Elmer Bartel took an Indian skull out of the river bench - an old one. 10 miles down river from Lorenzo Creek.

- Daniel Rohrbach when out in the hills and looked down into a gorge or opening of the mountains where there is a little hillock in an opening. There were seated coyotes in a circle with a leader. When the leader raised his tail the rest all joined in their unearthly cry. He would raise his tail again, and once more would be the coyote howl. Rohrbach killed two of them.

-Cont. no 12,219. This is the spot where Mrs. Julia Bettys collected the specimens on which I based A. obovata Jepson M.S.

-Cont. from p. 33 below middle of page.
This little rough cottage by the side of the road, a few oaks and digger Pine around it, looks rather primitive and forlorn. There isn't much sign of comfort or convenience; but when I enter the little sitting room I notice rugs out of the ordinary on the floor, a few good pieces of furniture, and some interesting pictures on the wall. The man Daniel Rohrbach looks not a little like a pirate with his six-shooter slung at his belt, or perhaps a bandit or "bad man". But shortly after I entered the cottage he turned up his radio set and the room was filled with the air of a Bach symphony. And I soon learned that this man was in touch with the native things: he had

dug up some rose bushes high on the mountain because different from anything he had seen and planted them in a protected spot near the house; they had just started to bud and grow. He had planted an old kettle in the bed of Lorenzo Creek when the water no longer ran; he fills this daily with water from the pump in order that the quail may not go thirsty.

-- Cont. Rhamnus insularis from vol. 44, p. 188. The flowers I examined a bit critically with my lens and thought the calyx had a distinctive cut. But a few days later, on the mainland, I ran into R. ilicifolia in full flower and the flowers were exactly like those of the Santa Cruz Island shrub. Cf. p. 43 supra, nos. 12,231.

– Ceanothus divaricatus Nutt. Spm. brought in today by A.E. Wiedlander, U.S. Forest Service from Middle Fork Cosumnes River near Baker Ford. He says he has found this nowhere south of the Cosumnes River in the region he has been working, as far south as Tuolumne Co. but hasn't noted it. He also brought in a specimen of Cupressus macnabiana, the cones essentially thornless! Several acres on a densely north slope. – June 13, 1927.

Kellogg, Albert. Some of his early botanical articles were furnished with colored plates in an early S.F. magazine, The Hesperian. Some plates were left over (when it ceased) and these were used in Bull. Cal. Acad. 1 not reprinted (says K. Brandegee) as indicated in Syn. Fl. 1:385 under Rhus laurii.

Con. A. Apostolides

June 13, 1927.

Born in Monastir, Turkey. from Greek Parents.

[Is a student in Plant Pathology; candidate Ph.D. When he gets his degree says he means to go back to Greece, though he will not be very welcome, since the scientists take life very easy and will not welcome a progressive research man! – W.L.J.]

– Lay, G.T., botanist of the "Blossom" voyage, was the author with E.T. Bennett of the Fishes of that voyage. Noted from Bateman's Natural History Cat. no. 1. (N.S.), 1927, p. 14. [Eastbourne, Eng.]

– Gerala canescens. Cont. from vol. 44, p 64, no. 11,709. This is common all over the desert, nearly everywhere: it was common about Indio; Mecca; Oasis and nearly all the way to Brawley. Mostly it was very common, often extremely abundant, and often again almost the only herb in its territory.

– S.B. Parish never quarreled with any one tho he raised Greene's ire once by sending out a distribution of plants with printed labels and giving the author of a binomial as Gray when it should have been Greene!

Parish, of course, explained to Greene that it was a bit of forgetfulness, an inadvertent slip. –

June 18, 1927.

– Brandegee, K. She sometimes took very especial pains to make an unusually fine specimen. See her sheet of Brodiaea Bridgesii in U.C. herb. – Simpson Ranch, Wats Sweetwater Creek.

Questions for Daniel Rohabach

. Cont. from p. 65 and p. 66.

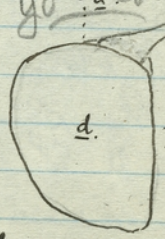
– How and in what direction does a Cal. lion's tail swing? Are horses especially afraid of lions? Cattle? Stampede? Did old Bill Williams tell the story of Red Bird on himself? Had Red Bird run in races? What is the most vulnerable part of a lion? Do a bullet in the head affect? Do eagles kill lambs? Carry them off? Sheep? Colts? How do eagles blind calves? – by striking with claws or beak? Eagle and bobcat in one setting – the bobcat first? Indian inscriptions at West ranch? Story of Grizzly fight and Ben Williams and Bill Folk.

Berkeley to Red Bluff

– Left Berkeley about 12:10, headed towards Mt. Lassen. H. Hein, Superintendent of Piedmont parks is with us.

No. 12,251. Asclepias eriocarpa Bth. In a grain field at Dunnigan. Hoods pinkish

Yolo Co.



d. – hood.
b. – ventral side of hood which is cleft backward as far as a.
c. – horn.

No. 12,252. Grindelia camporum Greene. Dry valley flats at Dunnigan. N. Yolo Co.

– We camp over night at Dunnigan. The next morning rather early we are at Orland and I stop for a moment to look at the bed of Stony Creek, an imposing winter flood stream. Glenn Co.

No. 12,253. Chenopodium

Stony Creek, Glenn Co.

No. 12,254. Heliotropium

Tuscan Buttes. Tehama Co.

curassavicum L. Stony Creek.
Var. oculatum (Heller) Jtn.

– We turn easterly from Red Bluff and a few miles westerly from Tuscan Buttes on the lava fields or at least fields of volcanic rock I collect:

June 20, 1927.

No. 12,255. Boisduvalia stricta (A. Gray) Greene

No. 12,256. Lagophylla ramosissima Nutt.

No. 12,257. Eriogonum vimineum Plants mostly not in flowers; my specimen just coming into anthesis.

No. 12,258. Juniperus californica

Several shrubs in a gully in the volcanic rock country noted above. Shrubs 12 to 14 ft. h., very broad.

No. 12,259. Galium

No. 12,260. Arctostaphylos manzanita Parry. Above Payne Creek sta. Tehama Co.

No. 12,261. Carex

For collecting station see p. 77

No. 12,262. Carex

Margin of rivulet; roots in water! with 12,261.

No. 12,263. Castilleia, near C. pinetorum Fer. with 12,261.

No. 12,264. Festuca occidentalis

This grass grew on the dry slope under pines. with 12,261.

– Cont. from p. 116. = Hugelia pluriflora (Hel.)! No. 12,172.

– We leave Red Bluff and drive easterly (as noted on p. 75). Tuscan Buttes are prominent in the low foothills. These foothills are volcanic rocks, large areas very sterile and covered with loose rock, other areas with a scattered growth of Quercus douglasii and Pinus sabiniana. The way is mostly up Payne Creek or along its drainage, past Dale's Ranch, to Payne Creek sta. Then we climb the ridge to the summit of the Battle Creek grade and then down grade into the Battle Creek meadows. A mile or so below the summit, traveling easterly, is a spring and watering trough. On the northerly slope at this point (steep) I collect nos. 12,261 to 12,264.

– Collinsia no. 12,220. Corolla: 2 lobes of upper lip standing perpendicular separately. This feature seems dif. from the pose of the upper lip in C. heterophylla. Cont. from p. 40.

Mineral, Tehama Co., 5000ft (Battle Creek Mdw.)

No. 12,265. Viola glabella Nutt.

Along streams and in shade of fir and pine woods

No. 12,266. Lathyrus nevadensis Wats.

Shade of fir and pine woods.

No. 12,267. Allium campanulatum S. Wats. det. M. Ownbey 1950

Open gravelly meadows.

Per. rags. flesh-color, a transverse pink flush at base just above a whitish band, the markings not sharply defined;

Diagram of crests of ovary lobes as seen from above.

The notched crests spread a little above the horizontal.

The plants are just coming into flower; the pedicels reflex immediately on anthesis.

5000ft. June 21, 1927

No. 12,268. Salvenaria

cont. p. 96.

No. 12,269. Sidalcea glaucescens Greene

The root crown branches are very woody and very hard. Why should not the fruticose people call it a "shrub"? Mr. Hein asked; What Godetia is that? This was an interesting question, for I speak of certain Godetias as having a "Sidalcea color." gravelly meadow flats.

No. 12,270. Vicia americana Muhl.

Stems ascending. Gravelly meadow flats.

No. 12,271. Taraxacum

Abundant in mdw.

No. 12,272. Collomia (Gilia gracilis Hook.) = Microsteris Mdw. = Var. stricta Brand.

No. 12,273. Trifolium pratense L.

No. 12,274. Trifolium repens L.

No. 12.275. Mimulus torreyi Gray.
Pine forest.

No. 12.276. Lithophragma bolanderi Heterophylla T. & G. var. scabrella (Greene) Jepson. Calyx broady cylindric or bowl-shaped, slightly or sometimes obscurely constricted above the base. Petals shortly lanceolate, deeply serrate from apex to base of limb, nearly erect! (not spreading horizontally or as if salver-form as in L. affinis and L. bolanderi). Pine woods.

No. 12.277. Stellaria jamesiana Torr.
Herbage clammy-pubescent. Petals white, the notch at apex v-shaped. Stamens 10,— 5 spreading between the petals, 5 erect! Styles 3. Note the thick rootstock.

No. 12.278. Hydrophyllum occidentale Gray. Pine woods.

No. 12.279. Ceanothus cordulatus Kell.

No. 12,280. Ribes cereum Dougl.
Hillslope by Feather River meadows.*

No. 12,281. Lappula californica Piper.
with 12,280.

No. 12,282. Linum perenne L. ssp. lewisii (Pursh) Hult.
Pine flats in valley by Camp Lee, Warner Creek. c. 5200 ft.
Plumas Co.

* "Feather River Meadows" is not, it seems to me, a very definite locality but the spot is labeled by the Forest Service "Feather River Meadows Public Camp grounds". The place is where the road comes down the divide, over the hill, east from Mill Creek and Morgan, traveling easterly. It is near Rice Creek, nw. Plumas Co.

We turn off the Susanville Road towards Hot Spring Valley. At Drakesbad we take the trail up Lassen Peak and collect the following:

Lassen Peak, c. 6000 ft.

No. 12,283. Arctostaphylos nevadensis Gray. On the ridge north of Hot Springs Valley this species forms "mats" 3 to 10 ft. broad amongst scattered conifers. It forms a rough "mat" 6 to 16 in. high. It layers naturally!

— The species on the ridge north of Hot Springs Valley near Drakesbad are: Ceanothus velutinus
Abies concolor, common
Pinus lambertiana
Castanopsis sempervirens
Prunus emarginata
Cyclodenia humilis
Arctostaphylos patula Greene. This species is abundant and is dominant over A. nevadensis
Quercus vaccinifolia Kell
Pinus ponderosa var. jeffreyi, common.

At higher levels, Arctostaphylos patula stops rather suddenly,

there being only scattered plants above and beyond this point, namely, at about 7000 feet. From this point on to the base or near the base of the mountain proper Arctostaphylos prostrata is dominant, forming extensive "brush fields" over the whole country. It is almost the only woody plant aside from the scattered Pinus contorta var. murrayana, P. monticola and Tsuga mertensiana. At least it is the only conspicuous one, especially at this time, for the season is early, we walk mostly over snow fields and other plants are not now noticeable.

Hot Springs Valley, Lassen Peak (cf. note, p. 85) ridge north of c. 6000 ft. bakeri Greene

No. 12,284. Viola ~~Nuttallii Pursh.~~

Pine woods.

No. 12,285. Arctostaphylos patula Greene. cf. p. 82.

No. 12,286. ~~Talinia~~ Claytonia lanceolata Pursh. Stamens 5, filaments clavate-dilated downward, almost bulbous at base.

No. 12,287. Arabis holboellii var. retrofracta (Graham) Rydb. Cleft of rocks.

No. 12,288. Arabis Lemmonii Wats. Cleft of rocks.

No. 12,289. Cheilanthes gracillima Eats. This fern grew in the cleft of rocks.

No. 12,290. Cystopteris fragilis. This fern grew under rocks and so was in shade.

No. 12,291. Galium

Cor. purple, 4-lobed.

Shasta Co.

No. 12,292. Mimulus torreyi Gray.

Cor. crimson.

No. 12,293. Gayophytum humile Juss.

No. 12,293a. Mimulus breweri Greene

No. 12,294. Arabis holboellii var. retrofracta Graham. Rocky slope.

No. 12,295. Cyclodenia humilis Bth. Sandy slide on mountain slopes.

No. 12,296. Ribes roezlii Regel. Hot Springs Valley.

No. 12,297. Saxifraga integrifolia* Hook. Swamp, Hot Springs Valley.

No. 12,298. Dicentra

No. 12,299. Carex

– Note for p. 84. Hot Springs Valley is in Plumas Co., the ridge north at 6000 ft is in Plumas Co. or possibly in Shasta Co. along the boundary.

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* S. oregana Howell not integrifolia

Warner Creek, Plumas Co., near Camp Kelly. 5200 ft.

No. 12,300. Delphinium
Open pine woods.

No. 12,301. Collomia tinctoria Kell.
A very small Polemoniaceous plant. "Opens" under pines.

No. 12,302. Microseris nutans
Composite. Disk yellow. The root is cylindric - fleshy thickened. It is exhausted in the flowering process and the next year another one forms alongside of it.
Open pine flats.

No. 12,303. Phacelia grisea-phylla (Brand).

No. 12,304A Collinsia parviflora Dougl.
12304 B. Collinsia Wrightii Wats.
Open pine flats

No. 12,305. Sanicula tuberosa Torr.
Open pine flats

No. 12,306. Senecio integerrimus (Nutt.) var. exaltatus (Nutt.) Crong.
Open pine flats

No. 12,307. Urythia
Open pine flats, very abundant. At the end of the

season the leaves lie flat against the ground under the weight of snow. The fleshy tissue decays leaving the ribs and network which make a striking tracery on the ground. In the very shaly-gravelly soil, so very porous, does the mesh of leaves form a protective cover about the base of the plant?

No. 12,307a. Balsamorrhiza (Discarded, insect damaged) Open pine flats.

No. 12,308. Lupinus laxiflorus Dougl. The common lupine on the pine flats. Near Camp Lee.

No. 12,309. Gilia aggregata Spr.
Pine flats, Camp Lee.

No. 12,310. = Hackelia Lappula californica Piper.
Pine flats near Camp Lee.

No. 12,311. Rosippa
In pocket towards lower end of Warner Creek valley.

Warner Creek to Morgan Spgs. Plumas Co. 5200 ft.

No. 12,312. Eleocharis pauciflora? Pondlet, towards lower end of Warner Creek valley.

No. 12,313. Scirpus

No. 12,314. Potentilla congesta Baill. var. tilingii Jepson. = Horkelia tridentata Torr. Dry pine flats, lower end of Warner Creek valley.

No. 12,315. Brodiaea Pine flats, lower end of Warner Creek valley.

— Cont. from p. 11 at top. The country on the south side of the Cuyama River is in Santa Barbara Co! The country on north side is in San Luis Obispo Co! Pine Creek is in Santa Barbara Co. The highway enters San Luis Obispo Co. from Santa Maria in Santa Barbara Co. crosses the river into Santa Barbara County and crosses back again into Santa Barbara Co. The highway in Cuyama Valley is chiefly in Santa Barbara Co.

Tehama Co June 23, 1927

No. 12,316. Ranunculus (Plumas Co.) Great swamp, near the point called Feather River Meadows, see note p. 81.

No. 12,317. Camassia Quamash (Pursh) Greene ssp. breviflora Gould. Filling with blue the swamp noted under no. 12,316.

No. 12,318. Mimulus torreyi Gray Forming fine patches of crimson here and there in the open forest. Morgan Springs.

No. 12,319. Senecio scorzonella Greene with 12,318.

No. 12,320. ~~Montia~~ Claytonia sibirica var. peterophylla Rob. On a water-dripping cliff. Some miles westerly from Morgan Springs.

No. 12,321. = L. oblongifolius var. nevadensis Lotus torreyi Gray. Banner yellow, keel and wings mostly whitish, the keel a little yellow tipped. with 12,320.

Morgan Springs, Tehama Co. 5200 ft. 23 June. 1927

No. 12,322. Epilobium glaberrimum Barby. Corolla crimson. with 12,320.

No. 12,323. Melica harfordii Boland.

This grass grew on a rocky bank. Near Morgan Spgs.

No. 12, 324. Rhamnus rubra obtusissima (Greene) C.B.Wolf. Near Morgan Spgs.

No. 12, 325. Stachys rigida Nutt. Corolla white.

Near Morgan Springs.

– Sarcodes sanguinea Torr.

I dug up carefully a plant of this with reference to its "root" character. I found only a mass of coralline roots, embedded to be sure or mixed in with a mass of roots of all kinds of green plants in the forest, especially abies concolor which grew close by, but found no organic connection.

Mineral, Tehama Co., 24 June 1927 5000 ft.

No. 12,326. Galium

No. 12, 327. Sanicula saxatilis. Pine forest. Greene. Pine forest.

No. 12, 328. Carex Pine forest.

No. 12, 329. Corallorhiza maculata Raf. Pine forest.

No. 12, 330. Ranunculus

No. 12, 331. Viola purpurea Kell. ssp. integrifolia S. & Cl. ined. Pine forest.

No. 12, 332. Viola lobata Bth. Pine forest.

No. 12, 333. Lewisia nevadensis (Gray) Rob. Styles 5; stamens 10; petals 8, white. Meadow.

No. 12, 334. Veronica americana Schw. Marshy mdw. Corolla pink.

No. 12, 335. Poa bolanderi Vasey

This grass grew in somewhat shady pine forest.

No. 12, 335a. Pinus ponderosa Dougl. (Dupl. sent to Lane-Poole, Canberra, Australia.)

Mineral, Tehama Co., 24 June, 1927.
5000 ft

The woods along Battle Creek northerly from Battle Creek Mdw. consist of Pinus Jonderosa, Abies concolor, Libocedrus decurrens, these chiefly. The floor is a shade floor, not deeply shaded, but more or less open, yet with many areas where the sun does not ever get fully through. The ground plants here are:

Adenocaulon bicolor
Goodyera
Hieracium albiflorum (rosettes only).
Viola lobata
Viola (no. 12,331).
Galium (no. 12,326).
Carex (no 12,328), rare.
Corallorhiza (no. 12,329)
(no. 12,335).
Castanopsis sempervirens
Prunus subcordata, its branches mostly spread-

Mineral, 24 June, '27.
5000 ft

ding horizontally on account of the weight of winter snow. It is by far the most abundant undershrub in the forest!! I was surprised at the amount of it. Smilacina sessilifolia

No. 12,335 b. Pinus ~~Jonderosa Dougl.~~ Jeffreyi Grev. & Balf. Displ. sent to Canberra.

No. 12,336. Chrysanthemum leucanthemum L. Showy plant in the meadows (Battle Creek Meadows). These specimens do not show well the size of the heads, the rays being much shriveled in drying.

No. 12,337. Sanguisorba occidentalis Nutt. with 12,336.

No. 12,338. Potentilla gracilis Dougl. var. hallii Wolf. with 12,336.

No. 12,339. ~~Brodiaea~~ Triteleia hyacinthina = Navarretia propinqua Suksd. with 12,336.

No. 12,340. Gilia interlexta (Hook.) var. propinqua Brand. with 12,336.

No. 12,340 a. Ceanothus cuneatus Nutt. Stem sections.

Payne Creek, Tehama Co.
1000 ft.

No. 12, 341. Brodiaea elegans Hoover
Cont. bottom page. See below. Dry hillslope above Payne Creek sta.

No. 12, 342. Asclepias eriocarpa Bth. Gravelly bed of creek, Payne Creek sta.*

No. 12, 343. Carex.
This formed most thriving large stools on the rocky banks of a creek, this creek being a living stream →

* The county of Tehama has men to cut out this plant, it being poisonous to sheep. So said the woman at the Payne Creek road sta., presumably Mrs. C.C. Ellis.

Brodiaea (no. 12, 341). anthers emarginate base and apex, closely approximate about style, their dehiscing edges turned outward, that is the anthers express the pollen, at the angles outwards. Staminodia bluntly lanceolate, a trifle shorter than the anthers.

(Cont. from middle p. 94.)
which had cut a sharp channel in the rock and was filled with much worn boulders and great pot holes. The stream is a fine deep creek, the great stools of the Carex dominating its banks and giving it a certain kind of sense of ordered beauty, the stools being so clean, bright green and handsome. See p. 97 re. name of this stream.

Payne Creek: Aesculus californica,
Pinus sabiniana.
Quercus douglasii.
Quercus lobata *
Rhamnus tomentella
Verbascum thapsus
Centaurea calcitrapa.

No. 12, 344. Philadelphus lewisii Pursh var. californicus Gray. with 12, 343.

* Coming down out of the chaparral this is the species whose fine groves make beautiful the valley of Payne Creek.

– Cont. no. 12,268. My companion, F. Hein, collected this about 1½ or 2 mi. up Battle Creek from the spot where we camped, which is in the pines about ⅛ mile from the Post-office. Hein got only three plants. They grew in the open forest not far from the creek. I am much struck by the very heavy fibrous stock crowning the rootstock. So we go back, and try to find more. But fail. I do not recognize the species of this plant in this stage.

– Westerly from Payne Creek is Antelope, over whose lower shoulders we passed. I note:

Pinus ponderosa cluster! quite insulated from the belt above.
Ceanothus cuneatus.
Rhamnus tomentella
Eriodictyon glutinosum.
Eremocarpus setigerus.

Arctostaphylos manzanita

– After leaving Payne Creek road sta. (the creek bed is a broad gravelly now dry wash) we ascend a little over the shoulders of Antelope Hill (cf. p. 96) (lower) (on slopes) * and then down again into the (See p. 95) * lowlands and crossing a live stream, which is running briskly in a solid rocky bed potholed by boulder action. Here I collect: Saxifraga peltata, Carex (no. 12,343), Fraxinus oregana, Cephalanthus occidentalis, Rhus diversiloba, Philadelphus (no. 12,344). Then we go up over low rough hills and down into the flat of Dale's Ranch road sta. Cont. p. 117.

* I tried in vain to get the name of this stream by writing to J. D. Sweeney. It may be that I was misled by the topography and that the stream is Payne Creek. C. C. Dale Red Bluff would know.

* over the low rough hills, to right following of Payne Creek.

No. 12,345. Mollugo verticillata L. Dry bed of winter rivulet. Pine Creek road sta. Petals 5, the 3 stamens alternate with the lobes of the ovary, the stamens inflexed and the anthers approximate about the 3 stigmas and closely dehiscing directly upon them. When there are four petals there are 4 stamens alternate with the petals. A 4-merous flower was found on the same branchlet as a 5-merous flower. 4-merous flowers appeared to be rare. Common at this locality.*

No. 12.346. Antirrhinum coronatum Bth. with 12.345.
See description on p. 118.

* Notice the water-storage tissue developed in stems at root-crown.

No. 12. 347. In small colonies on the dry gravelly rolling plain at Pine Creek sta.

No. 12. 348. Hemizonia fitchii Gray with 12, 246.

I take this to be Centromadia fitchii. In any event these seedlings are practically the only green plants on the now utterly dry and yellow rolling gravelly plain at Pine Creek road sta. This dry plain extends nearly to Chico and everywhere in the dry grass one sees these little plants scattered.

No. 12.349. Eryngium vallicola Gpson Bed of former winter pool, Pine Creek road sta.

No. 12.350. Brisdunalia glabella (Nutt.) Walp. with 12,249

Pine Creek road sta., 25 June
Tehama Co. c. 200 ft. '27

No. 12,351. Navarretia tagetina Greene. with 12,346.

No. 12,352. Navarretia pubescens H. & A. with 12,346.

No. 12,353. Gnaphalium palustre with 12,345.

No. 12,354. not used.

No. 12,355. Cyperus

No. 12,356. Rorippa = Radicula palustris Moench. Biggs. 100 ft. Rorippa islandica var. occidentalis

We stopped over night at Pine Creek, noted the great oak with its root grafts (100 yds. from camp) see p. 119 and measured the Blue Oak (p. 117-118).

Seed collected at Pine Creek. Numbered on p. 130.

— The old botanical correspondent is Mrs. Clara A. Hunt, St. Helena. In her letter of June 20, 1927 I was surprised to (her) have say that Alphonso Wood of the Classbooks of Botany was her great uncle.

— Left Berkeley at 10 o'clock Friday July 1, 1927 with Professor and Mrs. H. H. Dixon as my guests on a trip to the South Fork Eel River in Humboldt Co. to visit the Bull Creek Redwoods * Went via the newly completed Carquinez Bridge, Napa Valley, Knights Valley, Alexander Valley, Ukiah (where we stopped all night - the first night in the municipal auto park.)

No. 12,357. Godetia amoena, Lilja. Willits. Banks. Petals with a central purple spot, all fls. regularly spotted. Willits, July 4. (G. Don; also Clarkia) = var. Lindleyi Jepson.

No. 12,358. Agoseris grandiflora Willits, July 4.

* See p. 140.

South Fork Eel River

c. 550 ft.

No. 12.359. Tiarella unifoliata Hook. Bull Creek, July 3.

No. 12.360. Epilobium angustifolium L. Stamens proterandrous; upper flowers in a flowering raceme with stamens erect, anthers dehiscing, the style turned downward (deflexed) and (so to speak) out of the flower; lower flowers with shed anthers, the style has now moved up and stands in center of flower with its stigmas expanded (a stage that the upper flowers will successively succeed to). The lower pair of petals are a little "upflexed" so to speak, that is each one of the pair respectively right and left, so that there is an opening below, canoe

by these two petals to spread right and left as said. This opening has relation, doubtless, to insect visits. A bee visited the flowers of the standing stalks going rather methodically around and passing over again to catch flowers he had missed (but how did he know he had missed them?) and then he came to the stalk I was holding in my hand and went over the flowers in anthesis in the same manner. Wrott. 3 July.

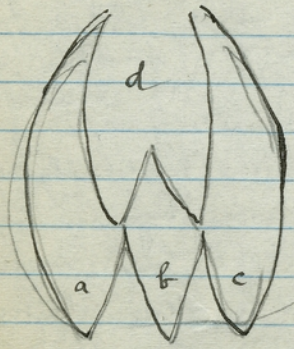
No. 12.360a. Iris Meyers sta.

No. 12.361. Centaurium umbellatum Gilib. Low places in valley flat; Meyers sta.

No. 12.362. Oxalis oregana Nutt. The seeds are expelled from the pods with considerable force, thrown at least 6 or 7 inches. Meyers sta.

"No. 12,363. Downingia elegans" Torr.

3 July.



Rough diagram of lower lip.

The three large lobes (a, b, c.) of the lower lip are parallel. The lip itself is somewhat saucer-shaped, that is a little concave. The lip is pale blue, the area marked "d" is merely a color pattern but is sharply defined and is a constant character. It is dull whitish in color with purple veins, very fine and web-like veins. The narrow upper lobes are recurved in such a manner as to cross each other. Miranda sta.

"No. 12,364. Boisduvalia densiflora (Lindl.) S. Wats. Miranda sta.

"No. 12,365. Leontodon nudicaulis L. Miranda sta.

"No. 12,366. Navarretia minima Nutt. Beds of former vernal pools on the flat. The heads are very "even" that is rounded with no spines projecting more than others. Miranda sta.

"No. 12,367. Navarretia intertexta Hook. Miranda sta.

"No. 12,368. Hypericum perforatum L. Miranda sta.

"No. 12,369. ~~Clarkia~~ ~~pulchella~~ amoena Don. Some flowers with 4 conspicuous purple spots to corolla; some unspotted. Jar-

Berville.

No. 12,370. Monardella villosa

Bth. Garberville, Humboldt Co.

No. 12,371. ~~Cardamine~~ Cirsium

Leaves primately parted, but the lobes not spreading in the plane of the leaf but at right angles to it, at least part of the lobe. This peculiarity is well marked in the dried specimen; notice that the lobes are all regularly turned over in one way. Near Leggett Valley

No. 12.372. Malacothrix

Floccifera Near Leggett Valley. The flowers (heads) were closed (it was about 3:30 in the afternoon, full sunshine). The individuals varied much in amount of floccular pubescence.

While our party were eating lunch, seated on the ground under the great Redwoods in the Lane Memorial Grove three Chestnut-backed Chickadees (Parus rufescens) came boldly into our little circle, lighting on us bodies and on the ground by us picking up crumbs of bread. They went off and returned a number of times, their movements very rapid. One perched on my hand and fed on the piece of bread and butter I held between the thumb and fore-finger! His feathers were somewhat rumpled, in his excitement, a good deal like a scolding hen, showing well the band of white feathers across the back of his neck between his dusky head and reddish-brown back. The sexes were

much entertained by them.

The second night we camped in the redwoods of Bull Creek. The third night at Longvale in a dry grassy flat near the road, — Pinus sabiniana, Quercus douglasii, Aesculus californica trees. It is a peaceful and beautiful camp, with the wooded hills rising sharply about. It is an open unfenced spot where anyone may drive in, but the autoists prefer the pay camps where there are plenty of people crowded close together. This spot, said I to Professor Dixon, is a vagrants camp.

It was beautiful and peaceful when we drove in, just before sundown, into the municipal auto camp at Ukiah—

the fine trees, the mountains rising grandly behind in the evening light, the auto camps here and there — pleasant and quiet. But after dark trouble began — that is noises began. People talked all night, vehicles came and went all night, another auto party arrived say about two o'clock and discovered they knew some campers opposite and yelled across at them, children played and romped until after midnight. Professor Dixon took all this philosophically, with a clear high-minded tolerance. He said: They like to make a noise; noise is a matter of course; it never occurs to them that they are disturbing anyone; they suppose you love noise as they do and you'll be making a great noise in your turn"! It is a very true

interpretation. In Bull Creek I expected a night of calm. But at 3 a.m. in the morning the children scattered through the forest camps (one hardly saw anyone in the evening) began a commade of fire-crackers in honor of the coming July 4! It was annoying — in so remote a place. But here at the vagrants camps, at Longvale, it is perfectly peaceful all night. Only one other machine came in — a small party — and camped a bit removed.

Professor Dixon remarked that the furze of the British Isles will burn green so that it is easy to have a fire on a wet day. (Other Europeans) If I remember rightly he also

said that the Heather will burn green (Erica).

The seeds collected at Longvale, Mendocino, are listed on p. 126 infra (nos. 12.382 to 12.384).

Dr. Harold
— St. John has been here and I have been talking with him anent his request for a biography of the Lemmons. Lemmon was never very strong and one wonders how he did so much. One is reminded of the negro: "I strikes the match of enthusiasm to de fuse of energy — and just naturally explode!" in explaining to "de boss" how he got so much work done.
See p. 120 infra. Lemmon was an enthusiast. Cont p. 139 infra.

— Calif. Botanical Explorers. Refs. to J.S. Newberry or others may possibly be found in: James Hall of Albany, Geologist and Paleontologist, 1811-1898. By John M. Clarke. pp. 505. 1921. Publisher: S.C. Bishop.

Vaca Valley, July 11, 1927

— The hay has been cut and taken off the Coburn field SE. of town. The smoothly mown surface now bears a dense growth of Centaurea solstitialis. The farmers thereabouts, Frank L. Gonsalves, in particular, say that this species makes a good feed when young, that cattle will eat it greedily. Frank Dickie confirms this. So does Clyde Whitman.

I noticed a stand of Vetches on the south side of the Coburn field. Whitman said they were brought in from Dixon or some other part of the county. The bees feed on the Yellow Starthistle (Centaurea calcitrapa) which is just coming into general bloom where it has not been mowed or hoed. Whitman

says further that the honey is excellent that comes from this species and is about the only honey we get thereabouts.

Clyde Whitman says Yellow Star-Thistle (Centaurea solstitialis) does not germinate its seed after the first year in the ground, that is during the second year. This seems to me unlikely.

Alameda Co.

Niles, July 22, 1927.

— Scabiosa atropurpurea — abundant SE. of Irvington.

— Melilotus alba; Niles Cañon (cf. Stock Poi. Plants Idaho, p. 172.)

— "Vitis californica Bth." " "

No. 12.373. Carex

Bed of Niles Creek (rocky bed), in characteristic form for this species. Just above Niles

No. 12.374. Cyperus

Bed of Niles Creek, above Niles

No. 12.375. Typha angustifolia L. Above Niles; Niles Creek.

Berkeley, July, 1927

- On the making of an herbarium

To Mr. Thomas Howell, at the Bixby Botanic Garden: You have an opportunity to make an entirely outstanding herbarium — one which will be notable for the quality of its material; the completeness of the specimens as objects of study and research, and the fulness of accompanying data. What are called "great herbaria" — the old ones, Kew, Geneva — are filled full of invaluable but ghastly scraps. Nowadays modern conception of the needs of research should rule in the building of an herbarium. — W.L.J., 20 July, 1927. [Howell is starting the very beginnings of the herbarium at Rancho Santa Ana.

Batavia, Aug. 7, 1927

- Poeniculum vulgare. There is a sort of wild strip which is completely over-run by this species. It lies, say 1/4 mile s. of the station, just after crossing railway, on the east and west road; the road with a branch n. which runs east, to the station, forming a triangle ("run wild").

Binghamton, July 28, 1927.

Solano Co.

No. 12,376. Damasonium

Flowers, showing the

Toothed petals.

No. 12.377. Damasonium

Fruits, dead-ripe.

No. 12,378. Marsilea quadrifolia =

M. vestita. Euphorbia serpyllifolia Pers.

No. 12,379. In bed of summer-dry pool; ne. of Elmira.

Little Oak Ranch, Vacaville,
Aug. 6. 1927

- The blue jays are abundant, now, at Little Oak. They carry off and occasionally drop the nuts of Amygdalus communis (Common Almond)

which accounts for the seedling almond trees about the place. I have noted 7 or 8, and there may be more. I also note several seedling Quercus lobata ½ to 1 ft. h. in the swale in the south of the orchard where the land is wild. These nuts undoubtedly were half-dropped by the jays and taken from the tree at the house, which has probably been bearing for some time. Mr. Frank Dickie, my neighbor, says the floor of his windmill tank has been well filled with almonds dropped by the jays.

No. 12,380. Chenopodium album — waste places

No. 12,381. Chenopodium murale

-J. G. Lemmon. There is a Mt. Lemmon in Arizona.

-Cont. from p. 97. A pretty valley, but with a dry creek and with another large dry creek coming into it a little further on as we cross it; then down this general drainage towards Red Bluff.

On the east side of the Sacramento River, the valley floor holds most wonderful Valley Oak groves (Quercus lobata) between Red Bluff and Los Molinos — a long distance.

The terrens passed over between Payne Creek and Red Bluff are a good deal like the Milville Plains further n. — Pine Creek road sta. Dry gravelly rolling plains lie se. The foothills of the Sierra

[Pine Creek, Tehama Co. 25 June, 27.

rise abruptly east. A blue oak (Quercus douglasii) tree at Pine Creek road sta. 1 mi. SE.); spread of crown 99 ft. trunk circ. 12 ft. 1 in. at 4 ft. height 50 ft. A perfect trunk. This grows solitary on the dry gravelly plain. It is a remarkable tree to look at on account of its smooth flowing broad crown.

-Cont. no. 12.346. Palate very prominently distended upward, its middle portion running down into throat with a dense stand of erect glandular hairs, the 3 lobes spreading from its lower edge, the middle lobe smallest. Upper corolla lobe with a deep V-shaped notch, the lobes turned

Cont. from p. 100.]

backward so as to be almost parallel.

— In the dry bed of a little winter stream the root system of Quercus lobata is much exposed and shows how, in what manner and how much, the roots unite across each other. There were 17 grafts of the large roots. This tree stands very near the Pine Creek road sta., Tehama Co. This union of the roots was very remarkable. It made a sort of lace-work and the consequent structure would, it seems reasonable to suppose, be of value in more firmly anchoring the tree, the pull of the crown in storm would have less uprooting effect.

– Dr. Harold St. John, State Coll. of Washington, calls this morning. They have acquired Piper's herbarium and library, at ↑ at Pullman small cost. Piper made the preliminary offer ↑ See p. 127 infra. before his death, knowing evidently that he was not to last long. He preferred the colls. to be at Pullman rather than Washington, D.C. St. John is to get out a new ed. of Piper & Beattie's Fl. of St. Wash. He has also ready a flora of the Grand Canon of the Snake River and is seeking an avenue of publication. He has been traveling through Cal. and has been as far as Claremont where Munz joined him for a trip to the desert. – Aug. 22, 1927.

– Dr. S. F. Blake, Smithsonian Institution, Washington, D.C., has been teaching at Stanford this summer quarter. Abrams got him out, induced the Trustees to appoint him, in order that Blake could look over the field in making ready to finish up Compositae for Abrams' Flora. Blake calls on me today to see various specimens of Compositae in the herbarium here at the Botany Bldg. Blake seems very keen and very sound. He and Mrs. B. join St. John in a motor trip along the coast through the Redwood Belt and north to Seattle. They start Aug. 27. Abrams, it seems, is soon off on a month's trip in the Redwood Belt. – 22. Aug. 1927.

— W.W. Eggleston, U.S. Bureau of Plant Industry, just called. He says: "In the game of publishing botanical text books Wood beat out Asa Gray, and Gray didn't like it. Wood's books, especially his early books were superior. Gray influenced Bolander undoubtedly in creating antagonism towards Wood; for Bolander was all wrought up about Wood's visit to California. Of course Gray was an immeasurably greater investigator than Wood, but Gray was no teacher and Wood was a most successful teacher. Gray created no botanists out of raw material; he never inspired any one to go into botany. Wood was

at and spoke before the alumni meeting of the College of California in Oakland (cf. S.F. Chronicle, about June 10, 1866.) Gray's greatest work on the North American flora was doubtless the Compositae. When anyone strays too far from his foundations I begin to feel doubtful."

We also discussed plant specimens and I remarked that much work will be in doubt hereafter because no specimens have been preserved to validate the names used. There is no man's determination or name that can be accepted as such for he may be mistaken. There is always the chance of an error. Most American botanists, outside of systematists, have no appreciation of systematic botany. They haven't even

an intelligent knowledge of the subject. The ecologists seem the most glaringly indifferent to the importance of the systematic side and the need of accuracy and of specimen records in their work. All this is not true of European botanists but it is true, unfortunately, in large measure in the U.S.

– At the annual meeting of the council of the Save-the-Redwoods League in San Francisco today there were present: John C. Merriam, President of the Carnegie Institution; J.D. Grant; W.H. Crocker; R.W. Bade; Senator A.E. Boynton; A.H. Carrick of the Eureka Bank; C.E. Grunsky; E.D. Merrill; Walter Mulford; J.C. Sperry; C.B. Wing of Stanford. The present situation was discussed. President Merriam said we were making good progress and that the Save-the-Redwoods League had done more, had achieved more, in the time than any other organization he had ever been connected with. He said it had acquired a reputation, that people spoke of it as having an objective and staying strictly by that objective. The four major projects of the League were thrashed out in detail, the Bull Creek area being first. We have assets on hand of $1,125,320.66. We are now to prepare to get our bond issue of $6,000,000 ~~to~~ passed by the people in 1928.

– Private Herbarium. T.H. Kearney, United States Department of Agriculture, Washington, D.C. had an herbarium. He sold it to the Univ. of Ohio. cf. "A.S. Hitchcock. Location of Type Specimens".

[Longvale, Mendocino Co.
Cont. from p. 111. July 4, 1927.]

No. 12,382. Trifolium tridentatum Lindl. Seed for garden

No. 12,383. Orthocarpus Seed for garden.

No. 12,384. Lomatium Seed for garden.

— In telling me today of his days in South Africa during the last college year, Professor Setchell, speaks of having visited the Bolus Herbarium in Cape Town where Mrs. Bolus did the honors. In connection with certain matters (the Herbarium does not get on well with the Botanic Garden), he described Mrs. Bolus as "short and sarcastic like Mrs. Brandegee". — 30 Aug. 1927.

Setchell looks well, walks spry, and is evidently much

improved by his year's leave.

— C. V. Piper made three herbaria: one while a student at Univ. of Washington (left at Seattle with the University); one during his years of service at Pullman; a third after he left Pullman, while he was with the U. S. D. A. at Washington. This latter is the one referred to on p. 120 supra. All this from St. John as noted p. 120. I take it tho' St. John speaks of 3 herbaria, the first could not have amounted to much.

California Botanical Collectors: Dr. A. Davidson, portrait in Bull. S. Cal. Acad. Sci. 15:28. l.c. H. E. Hasse, sketch of life, 15:8.

[Insert on p. 26. At this stop, I note very fine* Quercus douglasii, also most of the way down grade to the Henry Treat Ranch. Below the Treat Ranch, 3 mi. there is Pinus ponderosa. Also Ceanothus divaricatus, Rhamnus californica, Pinus sabiniana, Yucca whipplei, Quercus lobata comes in just below Treat Ranch.]

[Cont. from bottom p. 28, no. 12,205. Three miles below the Treat Ranch I collect on a gravel flat, nos. 12,204 and 12,205. At this point a living stream comes from the right. I am going down stream. Daniel Rohrbach told me this was Sacramento Creek. Needs confirming.]

* I put it down in my vest-pocket memorandum as "beautiful Q. douglasii".

[Cont. from p. 56. Daniel Rohrbach is a trapper and killer of animals, but he seems most gentle and kindly with a real feeling for nature. He takes much trouble to provide water for the quail since Lorenzo Creek is summer dry. He has transplanted a wild rose from the high mountains — a rose that interested him and it is growing.

[from p. 58 The Mortelin place is in the valley bottom of San Benito River at this point. The Hay boys are well-known residents of this region.] see p. 63.

- Cont. from p. 63. The Bear Valley school is at Pinnacles P.O. In this region Pentstemon centranthifolius is luxuriant — 4 to 5 ft. h. The C. W. Bacon ranch is just n. of P.O. Cont. p. 156.

- Cont. from p. 63. Clarkia pulchella is very abundant in Bear Valley and along Willow Creek the south fork.

—Kellogg, A. There is an appreciative sketch by John Hendley Barnhart in "American Medical Biographies", p. 649, Kelly and Burrage (1920). Also one of Asa Gray and doubtless of many others.

[Cont. from p. 100. The seed collected at Pine Creek, Tehama Co., I number here:
No. 12,385. Trifolium
No. 12,386. Trifolium
No. 12,387. Navarretia pubescens
No. 12,388. Navarretia tagetina
Insert above on p. 100]

— My student Thos. Howell, now collector for the Bixby Botanic Garden at the Rancho Santa Ana is passing through Berkeley today in company with

the horticultural propogator of the garden, Mr. Stark (formerly of Riverside). The two travel by truck, are collecting tree seed, and will go as far as Ft. Bragg. They went into the head of the Arroyo Seco, Santa Lucia Mts., and got Abies venusta cones. (This was about Aug. 15).

Today Howell comes in again, just from Santa Ana — Sept. 5, 27 Rancho

— "The article on violets is a sample of grandiloquent conceit and vagueness." — Philip Dowell, Publications for Sale, Cat. 4, p. 36, item on Greene's Cybele Columbiana.

— California Botanical Collectors. Douglas pioneered. Pop. Sci. Mo. [where] July, 1927.

— Daniel Cleveland, b. Mar. 21, 1838, acc. to G. Abbott in litt. Oct. 4, 1927.

Cont. from vol. 44, p. 183.

– I gather the impression that "everything" on Santa Cruz Island is different from the mainland, that is that all plant species in common with the mainland have some slight differences. Perhaps in some cases, perhaps in more, a case may be made out for regarding the Santa Cruz form as primitive. This would be so in case of Prunus integrifolia.

– In copies of Lemmon and Plummer correspondence which I have made from originals loaned by Dr. Harold St. John of Pullman, Wash. is a letter to Sara A. Plummer from Harry Hollister. It contains an interesting

reference to Geo. Davidson of the Coast Survey and his thoughtful regard for the work of the botanists in California. Davidson, as I have intimated before, was noted for his colorful blasphemy. — Oct. 18. 1927.

– Just in Miss Pearl Chase, of Santa Barbara, a woman who is an able manager. She initiated the garden tours in Santa Barbara for tourists. The owners of the great "show" gardens (costing $5000 to $50,000 a year to keep) have taken kindly to her plans. Her supervision and arrangements forces the gardeners to keep their places in constant good order, because it can never be told when Miss Chase will pay them a visit with her guides and tourists. Many of these owners are

away for 2 or 3 months each year, sometimes for 2 or 3 years at a time. They find that their places in their absence are now kept in order, and without any extra cost to themselves! Miss Chase graduated at U.S. in 1910. She is now mencoging a plan to make ready for publication some booklets on Santa Barbara garden flowers and native flowers for popular use. — Nov. 14, 1927.

– Dr. C. L. Shear, U. S. D. A., Washington, D.C., just called: He is on his way to the Hawaiian Islands to collect the fungi of the islands; five months stay. He wondered how I stood as to species and asked how I managed Greene's species when I spoke of work on my Flora of California. I

said: "Professor Greene was a man of large talents and it is to be thought a pity that he went off on such a tangent when he had marked capacity to do enduring work. His early species are mostly good; his later species are largely of dubious value." Shear then told two excellent stories on Greene. Dr. N. L. Britton came down to Washington to examine plants in Greene's herbarium at the Catholic University. Shear was there at the same time to consult rare books in Greene's remarkable library. A certain sheet turned up and Greene about it. Greene said so and so. Britton queried Why, said Britton, that is very remarkable; I did not know that. Said Greene quickly: Just so, Dr. Britton. You would find Botany (If you will only study it,

a highly interesting subject!"

Another time there was a meeting of the systematic botanmen in Washington for discussions and papers. It was thought well to prepare a program. Greene was asked if he would read a paper on violets. Oh, no, said Greene, I could not do that. Ask Mr. Pollard, here, to furnish a paper. He writes about violets, while I study them!

Thos. Edison*, says Dr. Shear, has the idea of extracting commercial rubber from native herbs, such as milkweeds and others. His cultural plots are in Florida and at Orange, New Jersey. Shear says Shantz, who

* See p. 137.

recently became Professor of Botany in the Univ. of Illinois, is to go to Tucson as President of the Univ. of Arizona. Shear cannot understand, any more than I, why a botanist should take a job of that kind. - I took Shear** and his son (who has married H. J. Webber's daughter) to luncheon at the Faculty Club. - Nov. 15, '27.

* previous page. One of Shears sons was employed by Edison in this work.

** Shear knows plants in the field. He says: "One cannot know a plant well unless you know it in the field"

- Collecting Specimens. A chap by name of H. L. Bauer, Kern Co. Junior College instructor, is writing a master's thesis (Univ. S. Calif.) on the plants of the Tehachapi. He

is a good field. He expected I would name the species for him from little scraps crowded into tiny envelopes in the field. I refused. Usually I work out a scrap where there is just one, or a few, but this man knows better. So many know better than to take mere scraps and yet they will indifferently put you to all this trouble. These scraps remind one of the solitary leaves or a solitary pressed flower which the ladies put in their albums. This taking of a leaf or two is a very sissified thing. Let them collect real material. Let them carry and use a pick, exert some elbow grease and get real material. Let them not be so feminine. Let some one of them buck up and be a man.

Baker has now sent in a few

passable specimens. — Nov. 16, 1927.

— Cont. from p. 111 supra. What Lemmon lacked in training and botanical education he made up in enthusiasm, and he succeeded to a degree that excites some wonder, perhaps to a degree that the formally educated person would be incredulous. Still many remarkable men had no formal education — Geo. Bentham, for example, who never went to school at all. — Nov. 23, '27.

Vacaville, Nov. 20, 1927.

There has been no frost as yet and everywhere the trees hold their leaves. Salix laevigata, for example, is in full leaf. The Cottonwoods are beginning to turn yellow.

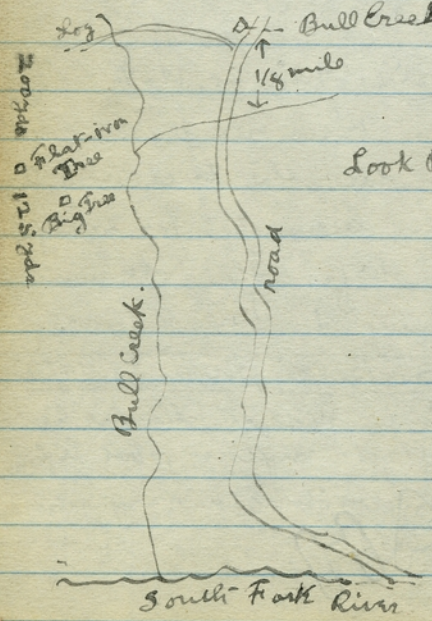
Berkeley, Nov. 29, 1927.

— C. P. Smith. Mason tells me he refuses to collect anything but Lupines. This is, undoubtedly a very narrowing process!

Berkeley

— The Parishes say that Daniel Cleveland was married about four years ago, possibly six years. Cleveland is now 89 years old. He will be 90 on Mar. 21, 1928 acc. to C. L. Abbott of the San Diego Natural History Museum (in litt. Oct. 4, 1927).

Cont. from p. 91.



October, 1927.

I had planned (this was Wednesday, Oct. 19) to go to the Little Oak Ranch on Friday next when there came a telegram from Mrs. Susannah Bixby Bryant* of the Rancho Santa Ana, Los Angeles, asking to see me Friday or Saturday. I delayed my departure and replied: "Come early Friday please". There stirred in my mind a natural curiosity as to why this remarkable woman should be coming all the way from Los Angeles to consult with me. My mind has never been fully made up about her; but I have deferred judgment because there is no hurry to appraise so unusual an individual. She came to my laboratory at 8:30 and stayed until twelve o'clock. She did most of the talking — as usual. I listened. At times I am a pretty fair listener. Her main purpose was to tell me that she means to discharge Thomas Howell, whom I recommended to her, from her employ. She finds him unsatisfactory for a reason which no one but myself would have guessed; and which in the case of the employment of Howell at the Rancho Santa Ana I did not anticipate would come into relief; in which I was — as is now to be seen — plainly in error, a slip in foreseeing. Howell, as one of my most promising students, has been on my mind a good deal. On several occasions he has been the theme of conversation when I have had opportunity to talk over the matters of my laboratory

* cf. vol. 53, p. 101.

Berkeley

with my friend, Mrs. Adeline Frederick, late Secretary of the California Botanical Society, who has helped me out a good deal by advising as to personnel. It seems to me, however, quite certain that when I spoke to Mrs. Frederick of this quality or defect we may call it in Howell, long before he went to the Rancho Santa Ana, that Mrs. F. in all probability felt that my criticism in this one matter was rather casual or due to the exercise of excessively high standards. When one talks over things in this way, not every remark is to be taken seriously; but in this case I was touching upon a point which was later, in another relation, to cause Howell's discharge from employment.

Mrs. Bryant did not begin her conference in this way. She began by praising Howell. She said that she had feared that on account of his somewhat "sissified" manners that he would not "fit in" with her staff at the Rancho Santa Ana. This is an all important matter to her. She does not tolerate any queer individuals in her large body of men. I recalled that she had been, as I thought, meticulously particular about seeing Howell before engaging him. However, this part turned out all right. He was almost excessively popular with every one, and one and all from the Superintendent down to the nurserywoman and ordinary Mexican peon affectionately dubbed him "that crazy enthusiast" (in Botany). In his manners and personality there was nothing to lack. Mrs. Bryant was much gratified. Nevertheless Howell did not satisfy. The staff at the Rancho Santa Ana is the pride of Mrs. Bryant's heart. She constantly talks of the devotion and loyalty of her men one and all. Not one but many stories, many incidents, many anecdotes has she related for the purpose of setting before me this matter, of making a vivid picture of the Rancho with its long train of faithful employees. In this entourage, - and one may call it so - for she lives in more than royal state - she will not tolerate a discordant note. A woman so able, so quick, so penetrating as Mrs. Bryant sized up young Howell. His soft, gentle and really endearing exterior by which Howell makes friends of every one he meets, did not deceive the practiced eye

of Mrs. Bryant. She said to me: "Mr. Howell has no intention of working for me. He is working solely for himself. He is using me merely as a stepping stone to something else. I am employing him during the summer at full time. I am furnishing him his board and room in addition. I have sent him out with a driver and truck to collect, paying all expenses. He has collected all this time a set of plants for himself without consulting with me or asking my permission. He is in every way working for Thomas Howell. He was, it was distinctly understood and agreed, to name up the herbarium specimens collected during the summer. This set is still at the Rancho Santa Ana untouched. He is working on his own set in Los Angeles; but he was to come to the Rancho Santa Ana week ends and do this. He has been to me only once since the summer work ended. I must let him go and get someone who will be willing to settle down at the Rancho Santa Ana as a permanent job." This is merely the gist of her talk.

Mrs. Bryant then indicated the kind of a botanist she wants as a resident at Rancho Santa Ana. I discussed this point a bit with her and jumped to the conclusion that she wanted my help in selecting a man. But when I took up this line there was no response and I knew instinctively and instantly that she was not coming to me for that purpose. Apparently she now intends to go to Abrams at Stanford. But why did she come to see me? Why take so much time and travel so far? As I said she talked a great deal and a long time. She told me the most intimate details of the life at Rancho Santa Ana or at her home in Los Angeles. Perhaps more or less trivial in a way — but the little happenings that fill up a day. She brought with her the plans of the new administration building at the garden, now nearing completion. It is to be the family home at Rancho Santa Ana, for the present. She is very proud of

this new building and what it is accomplish for the garden.

Mrs. Bryant has discovered something, which I feel sure, pleases her very much. As owner and successful manager of the Rancho Santa Ana she paid for whatever she got for ranch use as all ranch owners do. As founder of a botanic garden, a scientific project, she discovers to her delight, that so many persons do things for the garden for nothing; that all of us give seeds or plants, for example, without thought of any charge. She has told me of any number of gifts she has had and many more to come.

Tho', there was no occasion to do so to me, she re-iterated her position as to managing the garden. She means to manage it herself and has no thought of turning it over to a board of botanists. But she is forced by

the very nature of inexorable conditions to consider the future and she told me that she now plans to have, eventually, a board of twelve in number, consisting of her lawyer and girlhood friend, Allen Chickering; Mr. Howard of Howard and Smith, [Ed.] nurserymen at Los Angeles; some "prominent" man at Los Angeles who has advised her and whose name I have forgotten; a member of her family; and possibly a botanist. The ownership of the garden is, tactical however, to remain in her family, as the generations pass. Mr. Howard, the nurseryman, was very early in touch with her. He is, as she describes him, a rough crude man, but knows his business and how to propogate plants. He is of the firm, as said, of Howard and Smith, and made a great

hit with Mrs. Bryant at the start, by advising her (tho' himself a nurserymen) not to buy any plants for her native garden but to collect everything directly herself in the field. His (i.e. through her garden study) of advice is very sound, but its unselfish nature pleased Mrs. Bryant so much that she has told me the story 4 or 5 times at least.

Shrewd, cool, calculating, yet Mrs. Bryant gives no suggestion of being "hard", but takes you into her confidence in a way that undoubtedly, with most persons, if not everyone, makes loyal supporting and even sacrificing friends for the botanic garden at Rancho Santa Ana.

Today, Nov. 16, to my surprise she comes up from Los Angeles

again and calls upon me, tho' not coming especially for this purpose. She told me today that she means to sell the excess of plants which she propogates. She is confident that there will be a market for them – plants grown from the seed given her by botanists and others as a gift. Mrs. Bryant has, so quick, so penetrating, so resourceful, learned a great deal about the general field of botany in the last year even. She has a lot more to learn!

– John Thomas Howell was with Mrs. E. A. Bryant in Los Angeles buying a binocular. The shop had only one and the salesman said he would supply Mrs. B. in a week. She asked for the sample in stock and he refused to sell it, saying they could not sell their sample. She said: Send my card back to the Manager. Mrs. B. got the instru-

ment! This story illustrates the manner in which Mrs. B. always has her way. — This story I from H.L. Mason, Nov. 29, 1927.

— Mrs. Bryant now writes asking me to recommend a botanist resident for the Rancho Santa Ana.

— Now comes in today, Dec. 19, John Thomas Howell, fresh from Los Angeles. He says: "I asked Mrs. Bryant at the beginning if I might collect a set of plants for myself when collecting for her. She gave me permission. But not long ago — in early November — she put me "on the carpet" for collecting a set for myself. I joined issue with her and said she had given me permission. She said that she had not understood what it was about, but admitted that I had been quite open as to the fact of my making a collection for myself."

It seems to me likely that the real explanation is that Mrs. Bryant did not realize, being inexperienced in botanical matters, just what she was granting; she was acting gr-

-aciously, without realizing the significance of the action, not comprehending its botanical bearings. She finally realized that Howell had just as much as she had, and that her plants were not being cared for, while Howell was working on this. Howell says she became very red in the face and very angry.

Howell has two complaints against her: he thinks she is going to use the Rancho Santa Ana Botanic Garden as a social magnet, to attract distinguished visitors and travelers with whom she will enjoy talking, that even now she selects the pretty specimens from the desert to show to people. Secondly, he resents the conditions under which

he worked there. People worth knowing came to the place but Howell had no chance to meet them. A man from Kew, he says, was in one party; this man talked to him for three or four minutes when he was being shown the herbarium specimens, but Howell met him only as Mrs. Bryant's servant. — At the University of California in Los Angeles the only herbarium is that of Carl Epling. Epling has given this herbarium to the University as a memorial to his first wife, Mildred Hollis Epling, each sheet being so stamped. The specimens are rather poor and are determined only as far as the family and

Cont. p. 149

genus. It is consequently of little use for reference. — Dec. 19, 1927.
This from J. T. Howell.

- Comes in to call Dr. Herman Knuche of San Jose. He said: "My new herbarium building has cost me a fortune, a lot more than I ever intended to put into it. But I got my fingers in the pie and had to go through with it. I bought a building which had 4 stone walls and some rafters and thought I could put on a roof and finish it up for a few thousand dollars. It has cost me $40,000.00, so much as to make me quite heart sick, since I did not get ~~not~~ what I wanted after all. However, there is no use complaining over what is past and I have really a very nice little

place and you must not fail to look in on me when you come that way."

"I have been cataloging my library of over 12,000 volumes. It is a great task which had to be done by myself since others make too many mistakes. Next I must get at my herbarium and arrange it. The herbarium is just as it came in boxes from France."

"I have a heater for the building which cost $470.00. I have built me a trailer for my car, to carry my saddle horse. I have a vacuum cleaner brush for my horse. In six minutes

I can clean my horse as thoroughly as can an hostler in an hour and a half in the old-fashioned way. Besides there isn't today an hostler in San Jose that knows how to take care of a good horse. This does not sound much as if I were doing botanical work. Well, I haven't any competition, being isolated; I haven't students that look to me to do something. However I shall get back to work again."

"I do spend a lot of time socially. I ride a good deal. Ah, but I regret the mornings of France. The dishes that one has there! for dinner and the Chateaubriand wine! Ah, for that I long. I would much like to go back to France for that

because I do enjoy good eating!" – Dec. 21, 1927

Dr. Kuroke is author of the 3-volume Flora Balearica, He lives at the Hotel Vendome, San Jose. His herbarium building is three blocks n. of the Vendome at 694 Miller st. He remarked that he had seen in Peirce's laboratory at Stanford "a wonderful portrait of me by Van Valkenburg." He said: "That is a real portrait by a real artist." – Last night I lectured Wed., Jan. 4 at the California Academy of Sciences at their regular monthly meeting. It seemed as if very few were to be present, but by the time the business part of the session was ended the room filled up. The meeting

was held in the Assembly Room of the San Francisco Public Library at the civic center. My Palestine slides, all well-colored, were shown for the first time. The President of the Academy, C. E. Grunsky, presided. The elders of the Academy, including Dr. Evermann, were rather extravagant in their praise of the lecture, though I had no reason to doubt their sincerity.

At the business meeting was a bit of mummery. The members filed by voting boxes, secretly depositing white or black balls, for or against the names of various new members that had been proposed! Voting on new members should be done by the council; and in any event, in a scientific society should not be secret. Nothing should be secret in a scientific society.

The Secretary at the business meeting was J.W. Hobson. Through poor eyesight, his wife read the minutes for him. His sister, Mrs. Hobson told me, is Mrs. Geo. L. Goodale who is still living in Cambridge and whom they visited a short time ago. Present was an old timer, J. P. Rixford. When he collected plants in Inyo County it was incidental to an interest in a marble quarry near Owens Lake. He rode a donkey into the quarry. The donkey, always hungry, kept stopping and turning off the trail to nibble at a plant, thereby attracting Rixford's attention to this particular bit of vegetation in a desert land.

His interest in it was aroused and he collected specimens. It was described as a new species by T. Brandegee, Achyronychia rixfordii (Zoe, 1:230, — 1890).

— Cont. from p. 142. As between Mrs. Bryant and young Howell, I think I appraised the matter correctly. When I recommended Howell to Mrs. Bryant in such very high terms, the particular quality in Howell to which Mrs. Bryant objected I had myself noted, but I did not, somehow, weigh it in relation to his going to the Rancho Santa Ana. Howell's manners are exceedingly nice; his personal attitude towards you is thoughtful and considerate; he is properly deferential towards older persons or to officials; his personality is very engaging and most persons wish to do things

for him. When he asks for things or asks favors, the giver may find, as in Mrs. Bryant's case, that more has been given than intended. By strict scrupulosity this is not Howell's fault; people should be more critical or gaurded when he asks, simply because he does it so engagingly*. Still when you discover to your loss that you must be on gaurd with him, you may not altogether like it. Mrs. Bryant resented it very deeply. Dec. 19, 1927.

Also see p. 156, 155.

— Climate. Dec. 3, 1927 Wind change from s. to ne.; at 4:30 am., temp. rose from 51° to 62° in about 30 minutes. — Berkeley Meteorological Synopsis, Dec. 1927.

* See Men and Manners, 4: 86. See p. 175 seq.

— Dr. A. D. Houghton of San Fernando is here. He says: The old management of the California Botanic Garden is wholly out of it. The Metropolitan Trust Co. is wholly in control, having taken over all the land and issued bonds against it for 2½ million dollars. Acreage in that region is worth $23,000.00 which is much less than acreage in the Los Angeles region in general and it will all be sold. I have reserved an acre near the entrance gate and mean to put all my assets in it if the botanic garden makes a go of it.

Mark Daniels is the landscape man at the California Botanic Garden. He proposed to put a road through a certain spot. Copeland, the Assistant Director, with E.B. whom Merrill now shares his salary, said it must not be done, that it

would spoil his grouping of plants according to families. But, said Daniels while I am not Botanist, I am certain you could grow all the members of a family in one spot. Some require shade, some sunshine, some dampness, some dryness. But Copeland insisted he could. The result is, you can see the dead stubs of many of his (Copeland) things. Copeland ordered 500 Colorcasters — common things that grow about every bungalow. Instead of the garden paying for these, they could have been had free from nurseries that would have valued the advertising resulting from a gift to the botanic garden. Stephen Varra, who has a magnificent

garden of choice exotics, next to the botanic garden, offered to supply stock to the garden, especially varities. Copeland answered haughtily that the garden had money enough to buy its own stock! [This sounds as if Copeland were rather a fool. Even if he didn't want the stock, he could have been polite]. Merrill is just being used for his advertising value. When he no longer has advertising value, or if he resigns, it is certain that Copeland will never be allowed to succeed him. The garden has 800 acres."

— Professor E. B. Babcock gave a luncheon this noon to Dr. Rodney H. True, Professor of Botany in the University of Pennsylvania and Director of the Botanic Garden. He is

now on his way East via Panama, stopping off in Costa Rica, Salvador and Nicaragua. He has been interested in following up the seeds sent home or brought (progeny of) home by the Lewis and Clark Expedition.—

Jan. 27, 1928.

— I had a dinner party today of my young botanists: H.L. Mason, David Keck, David Goddard, Conrad Morton, Carl Meyer; also Forrest Crawford of Beirut, Syria, now an agricultural student here, and my friend Dr. R.W. Chaney, Carnegie Institution. I took them all to hear the lecture by Cherrie on the Roosevelt-Asiatic Expedition, in the evening. — Jan. 18, '28

— J.C. Fremont. Of his life in California there are some interesting suggestions in Motor Land, Feb., 1928. This article is undoubtedly, I take it, a compilation — but would direct one's search for certain things to original sources.

— Vortriede, William, who collected in Santa Lucia Mts. once, writes the account of the plants and trees in the State Capitol Park, Sacramento for the California Blue Book, 1913-1915, p. 7-8 (1915).

— Mrs. Susannah Bixby Bryant is in town again today, Wed. Feb. 1. She telephoned to my laboratory but I was out. See p. 150.

— Today comes in Rino Bacigalupi whom I recommended to Mrs. Bryant for Resident Botanist at the Rancho Santa Ana. He has recently had an interview with Mrs. Bryant. She made a very unfavorable impression on him in the

sense that she evidently expected him to stick very closely to his work, to dance attendance on Sundays when she has visitors, to sleep in a little cabin and to take his meals with the hired men in the mess hall. He does not think he will be treated as a botanist or have any privileges of freedom of action; at least he gets that impression. – Feb. 7, 1928.

– Cont. from p. 129. on p. 63, I say "a south fork of Willow Creek." This is true, but a little further up Willow Creek is another south fork marked "South Fork" on San Benito Quadrangle.

– Charles Fuller Baker, biographical sketch of (Lingnan Agricultural Review. vol. 4, no. 2. By W. E. Hoffman). July 1927. pl. 18.

– Mr. Rino Bacigalupi, Dept. of Botany, Mills College, just in, to call, in order to confer with

me about Mrs. Bryants offer to him of the position of Resident Botanist at Rancho Santa Ana. He reads his letter to Mrs. Bryant, indicating the terms on which he will go. I criticize his working and suggest terms that are desirable. Mrs. B. had asked me to recommend and I named Bacigalupi. See my letters to her; also p. 140 and elsewhere ante.

Bacigalupi also said that she had some time ago offered the place to McMinn at Mills College who said he would go as Director and for $6000.00. Both terms were unacceptable to Mrs. Bryant. She sought out McMinn, not he her. This story has evidence of being nearer the facts than the one previously told me by Mason.

– Feb. 11, 1928. See p. 167. See p. 150.

– Today I saw at luncheon at the Faculty Club Arthur Newton Pack of the American Nature Association and Nature Magazine. Our Forestry men were giving him a luncheon

and a part of the talk that was going related to the recent resignation of "Bill" Greely as Chief Forester of the U.S. He is resigning to take a position with the Northwestern Lumbermans Association. He now receives $7500 a year. The opinion was expressed that he would have, out here, not less than $12,000 or, tho' no one thought the change was due to money motives. After the Luncheon Pack was most anxious to have me contribute a wild flower article to the "California number" of the Nature Magazine. Tho he pressed hard I begged off. I ought not to be doing such things with the Flora of California so far behind. Also, I am declining lecture engagements which I am sorry to decline, as well as avoiding entanglements of every kind that take up time. — 21 Feb. 1928. — Darlingtonia californica plants, as taken out of their native swamps, are being retailed on the streets of Berkeley, for garden planting, at 50 cents each. It is unlikely that few people will know how to reproduce the conditions necessary for their growth. I am told the plants have also been sold in Sacramento. — March 1, 1928. — Mr. S. B. Parish is very low and will not last long. He celebrated his ninetieth birthday on Jan. 14, 1928, so that he has had a very full as well as useful life. He has

been active physically and botanically to within a year or year and a half, since which time he has been failing obviously. Up to the last he retains his cheerfulness and his gift for dry humor. Something was remarked about matrimony, and as he lay propped up in his chair, at the time of my call, Sunday, Mar. 5, he said: "Marriage is a great risk anyway you look at it. I took a great risk when I got married! [Mrs. Parish was sitting by.]. But it turned out fine! My wife took a greater risk when she married me, but I guess she thinks it was alright.

Mr. Parish went on a trip to Death Valley in 1915 with

Ellsworth Huntington. When Dr. Huntington returned he said to Mrs. Parish: "I have made two great discoveries on this trip which make it wonderfully worth while: First, I now know and appreciate what a marvelous fruit cake you can make. Second, I now know that you must be an extremely discerning woman to have picked out so fine a man as Mr. Parish. I have enjoyed him to the full!" — Mar. 6. 1928.

— David R. Goddard, one of my Junior students, traveled afield from California to Colorado with Professor E. B. Babcock last summer. In Colorado they called in at the Alpine Laboratory where Frederick Clements

holds forth. Clements said in the most positive manner: "There are no more new species to be found in California".

This violent statement, purely dogmatic, was, of course, stirred by my activities and, more especially, because he is a partner of H.M. Hall. — Mar. 8, 1928.

— Ralph Hoffman, director of the Santa Barbara Museum of Natural History, called this morning. He has found a Mrs. Bogg in Santa Barbara, quite aged (?78), a one-time neighbor of Mrs. Elwood Cooper. They botanized together. Or one went out into the cañons in the morning and took her finds to the

other in the afternoon. One day Mrs. Bogg took her finds to Mrs. Cooper. The lot was sent on to Asa Gray who found in it a fern (collected by Mrs. Bogg). Gray sent the fern to Eaton. Eaton named it Cheilanthes cooperae, Gray having supposed all came from Mrs. Cooper. Mrs. Cooper wrote a letter to Gray explaining that Cheilanthes cooperae had been collected by Mrs. Bogg. But Gray replied that he had already sent the material to Eaton and that Eaton had named it. Mrs. Bogg took Hoffman to the very spot where she had collected the fern so many years ago.

Hoffman is especially interested in making a

collection of Eriogonum, in connection with the building up of an herbarium at his museum. He brought in an excellent lot of material - but most of it difficult to name. - March 21, 1928.

- Guy L. Fleming, San Diego, came to call this afternoon with Allen Chickering. He said: "We are trying to have a state park made of the San Jacinto Mountain country. I have just been attending the National Parks Conference. On Santa Rosa Island I find Pinus torreyana." [I asked Fleming if the cones were of the broken-cone type?] He said yes. He thinks the Santa Rosa Island tree somewhat different from

the San Diego coast tree. Allen Chickering spoke of making a trip with Fleming into the Cuyamaca country to get live plants of Monardella macrantha for use in Hyde Park, London. The plants, however, heated and did not arrive in good condition. Chickering made a second trip and secured seed which he sent on. He said that the plant had been grown in London once, having been sent by Daniel Cleveland of San Diego, but had been lost. Chickering said the plant as grown in London from Cleveland's sending had been illustrated in the Botanical Magazine. - Mar. 21, 1928.

- There is a grand-daughter of Rev. J.H. Nevin in Botany 104 this

term. Her name is Elizabeth Nevin. She says her grandfather took up botany as a relief from the study of Chinese. He had been a missionary. — March 25, 1928.

— Victor Duran, with a numbering machine, stamps numbers in sequence on surgeons plaster. This is cut up as needed in the field and pressed around a stem of the collections in order as made. The number of a collection cannot, in this way, be lost or mixed. Mr. Duran is one of my forest Botany students of several years since who has been spending his summers in the field collecting in the White Mts. and Sierra Nevada of Inyo Co. He expressed to me a short time ago regret

that he had not followed my suggestion and gone into Botany. He took up Physics. — March 26, 1928.

— Cont. from p. 157. Mrs. Bryant, I learn now from Ruiz Bacigalupi, very haughtily rejects his terms, and expresses surprise, in an arrogant manner, that he should venture to propose conditions to his coming. See copies of the letters in my files. Further, I learn by letter from John Thomas Howell that he thinks of going next year to the Rancho Santa Ana as resident botanist (!!). See his letter. — Apr. 11, 1928 (my date).

— Private Herbaria. Restrictions regarding at Missouri Bot. Garden. See Report (Fluid), p. 15.

— Hurter, Jos. Grass Herbarium. See Rep. Mo. Bot. Garden 3:14.

Solano Co. Solano Co.

No. 12,389. Juglans Hindsii Jeps. Cult. at Little Oak.

No. 12,390. Sonchus asper 3 ft. h. At Little Oak Ranch, Vacaville.

No. 12,391. Emex spartica This graphaloid plant grew in old fields in the Montezuma Hills. 65 ft.

No. 12,392. Orthocarpus purpurascens Bth. With 12,391. Abundant locally. 65 ft.

No. 12,393. Pleuropogon californicus (Nees) Benth. ex Vasey (Det. Beecher Crampton, Nov. 13, 1925) This grass grew on the clay plain near Dozier sta. 11 ft.

No. 12,394. Trifolium barbigerum = T. gracilentum Torr. var. lilacinum Jeps.

With 12,393.

No. 12,395. Spergularia morena (Hornem.) Heynh. 11 ft. near Dozier sta. Stamens 10, each with a papilla-like gland on receptacle alternating with filament. These glands are not nearly so distinct as in no. 12,396.

No. 12,396. Spergularia salina = S. marina Stamens 5, 6, 7, 6, 7, 8, 8, etc. Each filament with a very distinct shining papilla-like gland at base. Near Binghamton. 30 ft.

No. 12,397. Baeria 11 ft. Dozier sta., alkaline plains. Palea of pappus 4, 5, 6. When 4 or 5 sometimes with 1 or 2 small ones, these blunt; the others aristate. Palea ovate, the margin more

Solano Co.

or less microscopically laciniate, produced at apex into an awn about as long as the paleaceous part, the whole half as long as the corolla.

Abundant. Receptacle conical. Ray fls. sessile or nearly, the disk on progressively longer pedicels towards center. Cont. p. 172

No. 12,398. Callitriche marginata Torr. var. longipedunculata Jepson. Brighamton. 30 ft.

Floating in vernal pools. From a study of the fruit of this one species, I revise the description in Manual as follows: Genus characterized thus:- Fruit roundish, flattened, the margin grooved all around, splitting at maturity into 4 nutlets.

The species diagnoses should be corrected as indicated in my scratch copy. "4-lobed" I think misleading, and certainly unnecessary.

These specimens show a stamen (a single one) in the axil next leaf the axis or stem. The ovary sits between the stamen and the petiole its flat edge pointed towards the axis on one hand, towards the petiole on the other; that is the fruit is compressed, that is at right angles to plane of leaf. The cluster, ovary and stamen, looks under a simple lens like a perfect flower. Cont. p. 172.

[Drove to Harbison Ranch. One of the family, Miss Julie Harbison, went on this trip to Montezuma Hills. At Brighamton we visited the old-time graveyard. The names on the stones are all British with one possible exception. On the whole the botanizing is very poor on the plains at this time of year. Back by way of Montezuma Hills and Denverton.

-Cont. from middle p. 171. This "perfect flower" is really an inflorescence as may be demonstrated by comparing with the diagram of Callitriche verna L. as given on p. 120 of vol. 3, pt. 5, Engler and Prantl, Die Natürlichen Pflanzenfamilien. — Cont. no. 12397. Involucres broadly turbinate, its bracts strongly keeled.

✓No. 12,399. Tamarix ~~gallica L.~~ tetrandra
Flowers pink. Petals 4; calyx-lobes 4; stamens 4. Ovary 3-lobed or rather 3-angled; styles 3.
Spontaneous along lower Suisun Creek towards ~~Benicia~~ Bingham.

-Howellia aquatilis
This was collected by E. L. Greene in pools of the spring-time nr. of Suisun very long ago — about 1891. I have looked for it in that locality a number of times but have never found it. The dry years would partly account for it; my failure to hit the right locals; or my lack of keenness in the field.

This trip I examined the pools again. I found stamens floating on the surface of the pools. It was not clear that they had been blown in nor could I see any plant in the pool which produced them. I feel certain now, however, that they are Eucalyptus globulus stamens. I gathered a number

from the pond surface and preserved them as:

No. 12,400. Eucalptus globulus Stamens shed from flowers. See p. 173 ante.

discarded 6/9/66 - very small quantity in tiny packet.

— Mr. H.L. Mason says Dean E.D. Merrill has not been paid his salary for three months as Director of the California Botanic Garden at Las Angeles. In other words the real-estate scheme is not panning out. They have failed to sell their lands - at least as planned.

This merely confirms prognostications.

Young Copeland, Instructor in Biology at the Sacramento Junior College came in to talk about work for a

Ph.D. degree — possibly selecting a thesis subject in Systematic Botany. As he went out he said that his father had left Los Angeles* for good. (was in Berkeley and) Young Copeland is a bright chap, pleasant to meet — and almost marvelously sophisticated.—

April 11, 1928.

— Men and Manners, Private Journal of W.L. Jepson. This note refers to footnote, p. 150 ante.

— Ericameria arborescens, a medical plant. Cf. G.A. Overstrom in litt. Oct. 31, 1928.

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* Where he has been in charge of the carrying out of the California Botanic Garden, Santa Monica foothills.

Left Berkeley 3:30 P.M. Monday, 16 Apr. Drove to Gilroy and took on gasoline and water. The man in charge of the filling station proved a kindred spirit as to "the open country". He knew Carl Abbott and the Arroyo Seco country; regretted keenly that that country was now spoiled by auto camps. He was jolly, good-natured, fat! Went on to Hollister, camped over night in the municipal camp ground which was empty. Broke camp at 7:00 a.m., breakfast in Hollister, drove to Paicines, hurried off on the Panoche Pass road. Botanized a little about Emmet (where is the Emmet School); on up Tres Pinos Creek to Antelope School, [2000 ft., which is near Panoche Pass, a low pass in the hills with Quercus douglassii in fresh young leaf and a little Q. lobata, the higher mountains northerly and southerly bearing considerable Digger Pine. It is a quiet pastoral country. Ow hears the Turtle Dove calling — a series of notes that carry more of human compassion, longing, tenderness and even the element of hope of any bird's song that I know. It is a fine day. Very cold last night; frost, they said, at Hollister.

Panoche Pass is 1265 ft. and without any landmarks or striking scenic features. Below the pass easterly is a school — no name on it — Cherry Hill School and a county graveyard where I collect (see p. 196).

Astragalus no. 12,412. This is still in flower, the mostly young fruit. The flowers are white, the parts not spreading but forming a very close cylinder. It is only in full anthesis that the sides of the corolla wings spread a little. On these erect racemes I saw a huge bumblebee seated at work; but when I approached to see how he did it, he went suddenly off in high dudgeon.

Below the Cherry Hill school some miles is Llanda road station (a store marked Panoche Store). Two miles or so further a road goes off north to Mercy Springs. After this Panoche School and a little further Panoche (small settlement). Here a broad dry valley with a few important looking ranches in the centre of it. But soon the ranches get fewer and fewer, and more frequently abandoned, for about up into a desolate range, utterly without vegetation save for the Ephedra bushes spotted over it — a great number in fact, but much scattered, though extensive as a formation. (No. 12,414. Ephedra. 2 to 5 ft. h.) From this range there is an impressive view of the next range, naked utterly, with an almost angular fretwork of canyons, the whole deeply wrinkled. It is a scene that commands completely one's interest for the mystery which it holds.

We are really following down the drainage of Panoche Creek though climbing up into and over the hills occasionally. Now, down into the broad creek bed again, the desolate hills all about. Here Nicotiana glauca makes a striking show. It is practically the only inhabitant of this locale. No native things, practically, are here. It flourishes where they cannot flourish or even grow. In some spots it makes distinct groves.

I now drive out onto the plain of the San Joaquin Valley into a formation of Atriplex – the whole scene as if a piece of the Mohave Desert!

I drive across the plain to Mendota, for gasoline, thence southerly to White's Bridge.

No. 12,401. Salvia columbariae Bth.
Paicines, San Benito Co.

No. 12,402. Melilotus indicus All.
Paicines, San Benito Co.

No. 12,403. Achyrachaena mollis
near the School about Cottonwood
5 mi. east of Paicines; on Tres Pinos Creek. 800 ft.

No. 12,404. Bromus mollis L.
with 12,403.

No. 12,405. Astragalus (oxyphysus Gray, not ~~leucophyllus T. & G.~~ Emmet, Tres Pinos Creek. See p. 176. 1125 ft.

No. 12,406. Baeria
1125 ft. Emmet, Tres Pinos Creek.

No. 12,407. Bromus rubens L.
1125 ft. This grass coll. near Emmet
See p. 176.

Panoche Pass to San Joaquin Valley, Apr. 17, 1928

San Benito Co.

No. 12,408. Castilleia foliolosa H. & A. Emmet, Tres Pinos Creek. 1125 ft.

No. 12,409. Lamarckia aurea Moench. This grass grew in dry adobe soil on a hill slope near Emmet. 1125 ft.

No. 12,410. Baccharis viminea DC. Panoche Pass, just below summit, east. ♂

No. 12,411. Baccharis viminea DC. with 12,410. ♀

No. 12,412. Astragalus oxyphysus Gray. In the country graveyard by the school, the first school one meets going east from summit of Panoche Pass. See p. 178. = Cherry Hill School. 2000 feet.

No. 12,413. Eremocarpus setigerus Bth. Senile state; over winter plant body. In the valley flat at Llanada, San Benito Co. 1434 ft.

No. 12,414. Ephedra w. Fresno Co. On the desolate range easterly from Panoche Valley, as per description on p. 179.

April 18 Kern Co.

No. 12,415. Linanthus liniflorus var. vallicola Greene. Famoso; Sand, San Joaquin Valley plain. c. 400 ft.

No. 12,416. Astragalus oxyphysus Gray. With 12,415. Many stems from base; quite erect! c. 400 ft.

No. 12,417. Henrisonia pallida Kern Co. Sandy plain, Lerdo c. 400 ft.

No. 12,418. Linanthus liniflorus Greene, with 12,417. = L. pharnaceoides. var. vallicola Jepson.

No. 12,419. Bromus rubens L. (det. Beecher Crampton 1935) This grass grew with 12,412.

San Joaquin Valley
Rose sta., c. 425 ft.
Kern Co.

No. 12,420. Astragalus lentiginosus Dougl. Sandy plain. Rose sta.
[var. nigricalyxis Jones

No. 12,421. Oenothera dentata Kar.
[not var. campestris Jepson. With 12,420.

No. 12,422. Hemizonia pallida Keck
With 12,420.

No. 12,423. Astragalus antisellii Gray. Lebec. 3500 ft

No. 12,424. Lotus subpinnatus Lag. Lebec. 3700 ft.

No. 12,425. Astragalus antisellii Gray. mts. above Castaic
Cont. below. L.A. Co. E. 3000 ft

No. 12,425a. Lupinus nanus Dougl. var. menkerae C.P. Sm. Rose sta.

– Cont. no. 12,425. Stems numerous from rootcrown, branching low, erect and ascending, forming dense clumps 10 to 18 in. high, 20 to 4 feet broad.

to Pasadena, Apr. 18, 1928

– introduced plants. May occur in remote places, as Anogallis arvensis on slopes of Palomar in wildest cañons. – H.W. Peirson.

– Left Pasadena with Frank W. Peirson in his car about 8:30 a.m. Stopped for groceries and supplies, car adjustment, and got on an [the north and south line of] way eastward to Euclid Ave., thence following this long fine straight road southward to its end whence we turn towards Corona. Euclid Ave., on its upper part, has two fine rows of Schinus molle trees down its central parking, with an outer row of trees on each side. We proceed from Corona to a point in the hills about 5 mi. northerly from Elsinore where there is a "burn".

Riverside Co. 2

Elsinore to Palomar Mt.

Hills 5 mi. n., c. 2000 ft.

No. 12,426. Asclepias californica Greene. Flat in cañon, n. of Elsinore.

No. 12,427. Emmenanthe penduliflora Bth. Sandy soil in "burn". 5 mi. northerly from Elsinore

No. 12,428.

This gnaphalioid plant grew in sandy soil on a "burn". 5 mi. northerly from Elsinore.

No. 12,429. Cryptantha muricata Nels. & Nocbr. var. jonesii Jtn. With 12,428.

No. 12,430. Senecio Malacothrix clevelandii with 12,428.

No. 12,431. Eriophyllum with 12,428.

No. 12,432. Calochortus (Tossed - eaten up) Petals clear lilac. with 12,428.

No. 12,433. Antirrhinum coulterianum Bth.

No. 12,434. Gilia altissima (Parish). with 12,428.

No. 12,435. Phacelia minor Thell. with 12,434.

No. 12,436. Pentstemon spectabilis Thurber. 1019 ft. Temecula.

No. 12,437. Rhus trilobata Nutt.

No. 12,438. Viola douglasii Stend. Henshaw Dam. Slopes near Palomar.

No. 12,439. Erodium botrys Bertol. Slopes near Palomar.

Nos. 12,426 to 12,435 were collected on the "burn" referred to on p. 185. The road to Henshaw Dam from Pala passes along the lower slopes of Palomar Mt. We did not go on Palomar proper but proceeded to Santa Isabel, Julian, and thence down the cañon in which lies Banner to San Felipe Valley, coming out in the sw. corner. A new road runs across to the Sentenac Cañon and through it!!

No. 12,439a. Chorizanthe fimbriata 2450 ft. Gravelly slope of rocky outcrop in valley. Sepals laciniate-fimbriate.

No. 12,440. Eriogonum maculatum with 12,439.

No. 12,441. Brickellia frutescens Gray

No. 12,442. Nicotiana trigonophylla Dunal. Under shelter of the blocks of boulders on a rocky outcrop. Perennial! This plant, as uprooted, showed an apparently annual root! but as it was examined more closely it was obvious that the rank fleshy shoots of the season had arisen from a short subhorizontal stock by means of winter buds, the differentiation between shoots and stock or caudex being sufficiently clear. Moreover there is, in addition, a single dead black branch persistent from last year.

No. 12,443. Ellisia = Eucrypta chrysanthemifolia Greene, var. bipinnatifida Constance. Amongst the angular blocks of rock in an outcrop in the valley.

No. 12,444. Euphorbia melanadenia Torr. Very common on the valley flats and in the washes.

No. 12,445. Cheilanthes covillei Maxon (Det. R.M. Tryon, Jr., 1938) Crevices of rocks under shadow of rocks.

No. 12,446. Coleogyne ramosissima Torr.

No. 12,447. Sphaeralcea ambigua Gray Rocky outcrop. Petals very deep apricot color. Stem taken down to ground.

All the collecting in San Felipe Valley done on morning of Apr. 20.

No. 12,448. Melica frutescens Scribn.

This grass grew on the rocky outcrop by camp, between two boulder blocks, the stems arising from a horizontal rootstock which bore a dense tufted band of bases of last year dead stems

No. 12,448a. Pellaea mucronata (D.C. Eaton) D.C. Eaton var. mucronata

No. 12,449. Mirabilis laevis (Benth.) Curran

Quite glabrous and non-sticky, or mainly if not wholly non-glandular.

No. 12,450. Microseris linearifolia

Poor - discarded LRH Sandy-gravelly slope

No. 12,451. Gnaphalioid plant with 12,450 = Stylocline gnaphalioides Nutt.

No. 12,452. Sphaeralcea ambigua gray.

No. 12,453. Eriophyllum wallacei var. rubellum.

I have never collected this save white rays. What about the term with rubellum? Sandy flats and washes. Fragment.

No. 12,454. Echinocereus engelmannii

This cactus grew on the rocky outcrop near camp. It has rose-red flowers.

No. 12,455. Xanthium canadense

Stems remarkably white. Profusely branched plants - i.e. from base. Sandy wash of the San Felipe Creek

No. 12,456. Lycium andersonii Gray. Spreading bush 4 ft. h. Sandy wash of the San Felipe Creek.

No. 12,457. Astragalus vaseyi Wats. Corolla purple. Spreading or decumbent branches. Sentenac Cañon.

No. 12,458. Astragalus nuttallianus DC. Annual. Sentenac Cañon.

No. 12,459. Eriogonum thurberi Sentenac Cañon.

Sandy soil.

Sentenac Cañon and
San Diego Co. 1100 ft.

No. 12,460. Lotus humistratus Greene. Sentenac Cañon.

No. 12,461. Brickellia arguta Rob. Rocky wall, Sentenac Cañon

No. 12,462. Pentstemon clevelandii Gray. Rocky wall of Sentenac Cañon.

No. 12,463. Mimulus Vegelovii Gray. One plant with pale almost white flowers. Sandy Bed of the Wagon Wash.

No. 12,464. Dysodia porophyllides Wagon Wash.

No. 12,464a. Phacelia parryi Torr. Var. elata Jepson + Hoover. Sentenac Cañon

No. 12,465. Parosela schottii Hel. See p. 198. Wagon Wash.

No. 12,466. Senecio californicus DC. Wagon Wash.

No. 12,467. Lotus strigosus Greene. Wagon Wash

No. 12,468. Chorizanthe fimbriata Nutt. Wagon wash. Rep

Wagon Wash, Apr. 20, 1928
San Diego Co., c. 1300 feet.

als laciniate - fimbriate.

No. 12,469. Cotyledon lanceolata = Dudleya saxosa ssp. aloides B. & W. Flowers obturbinate or conic in bud, on opening of the corolla the outline changes but slightly, still remaining essentially conic. Branches of the cyme pink. Corolla greenish - yellow. Rocky ridge by Wagon Wash.

No. 12,470. ~~Parosela~~ Dalea parryi Hel. (Det. R.C. Barneby, 1967) Wagon Wash.

The flower is curiously marked. It is as if the white corolla had a band of indigo lengthwise of the middle. The banner being so small the effect is, as if the upper part of the flower were indigo-blue and the lower part white. The banner is white on the middle and blue on the edges. The upper part (lengthwise) of keel

Wagon Wash near Sentenac
San Diego Co. 1300 ft.

and rings are purple and lower side white. Plants erect, diffusely branching.

No. 12,471. Cryptanthe barbigera (Gray) Greene. Gravelly wash bed.

No. 12,472. Trixis californica Kellogg. Rocky slopes.
Rays clear lemon yellow.

No. 12,473. (Discarded, insect damaged) Encelia
Rocky ridges.

No. 12,474. Cryptanthe barbigera (Grey) Greene. Wagon Wash

No. 12,475. Euphorbia polycarpa Bth. var. typica Wash

No. 12,476. Larrea tridentata var glutinosa Jepson. Now in full flower and young fruit. Sentenac Valley.

— Mr. Peirson, my companion, looks out for snakes. I seldom think of them. I remember, once upon a time, running suddenly a rattler, throwing my botanical pick at him and nearly cutting his head off.

Cañon, Apr. 20, 1928, c. 1300 ft.

We made camp on Apr. 19. about 5½ o'clock in the little cross-ridge of tiny rocky hills on the lower part of the San Felipe Ranch. It is very cold and the wind blowing hard from the west. It blows hard all night long, so hard as if, lying on the ground, I am to be blown away quite. In the middle of the night I get up and move my bed to the lee of a Larrea tridentata bush, which is some help. Peirson who is sleeping in the car turns the car around and thus gets shelter. The wind comes in heavy gusts, with a sort of ripping roar, sounding in the low bushes as if we were threshing through a mighty forest. It has a sort of "insensate fury", as some one has said. I stay cold all night.

We move down the next day, Apr. 20, through Sentenac Cañon, and

Wagon Wash near Sentenac Cañon, San Diego Co. Apr. 20, 1928 c. 1300 ft.

turn up, off the road, into the lower part of the Wagon Wash, a hundred yards or more, and make camp. It is still very windy but we spend the day botanizing in the wash. In this locality I collect nos. 12,463 to 12,510. We spend the day and night here. It is a fine camp in a fine country for botanizing.

– Salvia apiana Jepsn. Leaves acute at base or at most obtuse.

S. vaseyi Jepson. Leaves truncate at base (or subcordate?).

– Cont. from p. 177. Must be higher acc. topographic map. I may have taken this figure, 1265 ft., from a sign in the pass.

No. 12,477. Thelypodium lasiophyllum var. utahense Jepson. Wash.

No. 12,478. = Caulanthus cooperi (Wats.) Pays. = Thelypodium cooperi Wats. Wash.

No. 12,479. Malacothrix glabrata Ligules lemon yellow.

No. 12,480. ~~Chaetanthes~~ Notholaena Parryi DC. Eaton. (det. R. Tryon, 1957) Crevice of rocky wall.

No. 12,481. Tridens pulchellus (HBK) Hitchc. This grass grew on the soft banks of the wash.

No. 12,482: Phacelia pedicellata Greg. Cont. p. 206. Crevices of rocks, rocky cañon walls. Corolla very pale lilac. Scales set in pairs between the filaments, not erect but appressed against corolla tube so that their edges meet, but below rising into a helmet-like or rounded inflation, the pair of these making a sort of chamber towards base in interval of 2 filaments. free

Wagon Wash near Sentenac Cañon
San Diego Co.

c. 1300 ft.

Apr. 20, 1928.

No. 12,483. Prunus fremontii Wats. var. pilulata Jps. Borders of wash; shrubs 6 to 7 ft. h. These apricot bushes fruit-loaded.

No. 12,484. Monoptilon bellidiforme. Decumbent or subprostrate in the washes

No. 12,485. Nemacladus. Corolla 2-lipped. Washes, common, but the plants difficult to see as easily overlooked. See p. 205.

No. 12,486. Nemacladus Corolla regular See p. 203. In the washes, scattered individuals, rather common, but difficult to see.

– Cont. from p. 192. No. 12,465. This seems different, esp. in calyx and color cor., from my Myers Creek bridge plant, foot of Mt. Springs grade. It is the same as my 11,704 (Silent Cañon, Santa Rosa Mts. foothills) which I take to be var. simplifolia (Parish) of P. fremontii. Also that is my 11,683 (Painted Cañon, Mecca), but this latter is hard to separate from P. schottii of Thousand Palm Cañon (my 6040).

– Chilopsis saligna, fine grove of this in bed of stream opposite and just above Yaqui Well. Trees 14 to 20 feet high; trunks 8 to 14 in. diam.

– Cont. no. 12,943. Plants 1 ft. h., 2 ft. broad, one mass of hanging pods.

– Simmondsia californica Nutt. is browsed!

Wagon Wash near Sentenac → below San Felipe Valley.

No. 12.487. Cryptanthe muricata Nels. & Mebr. var. jonesii Jtn.

No. 12.488 Chorizanthe thurberi (Gray) Wats. This strange-appearing plant is always a novelty to meet. No other polygonoid of the desert is, in some ways, so curious. Wash.

No. 12.489. Eschscholtzia minutiflora Wats. Wash

No. 12.490. Pectocarya setosa Gray. Wash

No. 12.491. Pectocarya recurvata Jtn. Wash.

No. 12.492. Eriophyllum Wash. cf. 12,453.

No. 12.493. Physalis

Cont. p. 199 ante. Rock wall of cañon

No. 12,494. Lyrocarpa coulteri var. palmeri (Wats.) Hook. & Harv. Roll.

cañon, Apr. 20, 1928, c. 1300 ft. San Diego Co

= Eriastrum eremicum

No. 12,495. Gilia dasyantha Brand. = Hugelia eremica Jepson! Wash.

No. 12,496. Eriogonum Palmeri Wats. Plumatella var. plumatella Plants not merely erect, but the branches intertangled so as to make a sort of weave. It is as if the branches braced or supported each other. The finest plant that I saw had a distinct trunk 3 or 4 in. h., then closely branched, rebranched above and forming a compact narrow tangled crown. The whole 3 ft. h.

No. 12,497. Acamptopappus sphaerocephalus.

No. 12,498. Phacelia distans Bth.

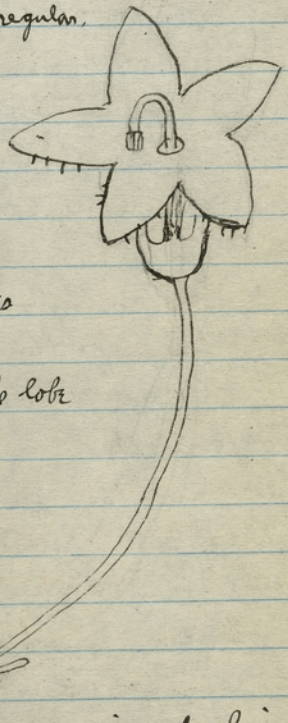
No. 12.499. Cassia covesii Gray. 7 fertile stamens, 3 staminodes. Wash.

Wagon Wash near Senecac Canon
San Diego Co.

Apr. 20. 1928, c. 1300 ft.

– Many things show only a single individual, so far as we notice. For example, only one individual of Cassia armata Wats. was found. The desert, therefore, requires careful scrutiny – all the more in that certain things are everywhere so omnipresent. It is, too, easy to walk over inconspicuous plants in the desert sands, such as Nemacladus no. 12,486.

– Nemacladus no. 12,486,
Cont. from p. 199.
The corolla is white, without markings. It is apparently regular, but a bilabiation can be made out; 3 lower lobes (lower in the sense of facing the axis) and 2 upper lobes (away from the axis). The middle lobe of lower lip is weakly ciliate, and the sides of the lateral ones next to it.



The stamen column is declined (or recurved at apex) towards the lower lip. at base the filaments seperate and spread out over the summit

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– Cont. from p. 46. Emmenanthe pendulliflora Bth. var. rosea Brand. No. 12,236.

San Diego Co.

of the ovary so as to be inserted opposite the corolla sinuses. I detect no glands on the filaments nor on their bases

I presume the pedicels must be twisted so as to throw the lower lip into the position, morphologically, of the upper lip (i.e. next main axis).

- Cont. from bottom of p. 246. I am certain that three distinct species were collected and the distinctions noted in the field with some care — but these three three, except 12,601 seem lacking as to notes, and one entirely.

- Nemacladus no. 12,485,

cont. from p. 198.

This flower appears to be subject to the same interpretation with reference to the axis as no. 12,486, see p. 203. That is the lower lip is next the axis and the upper lip away from the axis. In this case the corolla is strongly 2-lipped (3 lobes in lower lip, 2 in the upper). The corolla tube is almost none, with calyx lobes rotate. In 12,486, the corolla tube is much longer with the calyx-lobes erect! The lobes of lower lip are weakly ciliate, in the way that no. 12,485.

Wagon Wash near Sentenac Cañon
San Diego Co.

the lower lip ↑lobes in 12,486 are ciliate.

– Phacelia no. 12482.

Cont. from p. 197. Style slightly hairy below, cleft nearly to middle; ovary a little hairy, seated on a narrow white disk

– Cont. footnote from p. 266 seq. Dr. Edwin Van Dyke (Entomology, U.C. College of Agriculture, gives me the most recent nomenclature of the Yucca Moths:

– Tegeticula (Pronuba) maculata Riley. Calif., Colo.; pollinates Yucca whipplei.

– T. (P.) paradoxa Riley. Cal. Pollinates Yucca brevifolia.

– T. (P.) yuccasella Riley. S. Atlantic states and west plains. Pollinates Y. filamentosa and angustifolia.

– Oct. 1928.

Apr. 20, 1928, c. 1300 ft. *

– Eriogonum Palmeri Wats. There is a great deal of this in the wash called Wagon Wash. It forms colonies and makes a marked stand in places where there is little other vegetation. It also grows as scattered individuals on the first bench above the wash (3 to 5 ft. higher) scattered amongst the creosote bushes and cacti in open places. Cont. from p. 201, no. 12,496.

* Rough estimate. All locs. in desert similar estimates, where no contour maps.

Wagon Wash near Sentenac Cañon

San Diego Co.

We moved down this afternoon from Wagon Wash to Yaqui Well and camped for the night at Yaqui Well.

In the morning we drove back to Wagon Wash and I walked up the wash and into Mule-track Canon, the large cañon to left of Wagon Wash Cañon, and collected cacti

No. 12,500. Echinocactus acanthodes Lem. Barrel Cactus, 5 ft. h., 16 in. diam., 29 ribs. Petals broadly linear, acute, drawn down to a stipe-like base. Petals straw-color. distinct Style yellowish, cleft nearly half way into slender branches, these 13 or 14. Filaments pink; anthers yellow.

No. 12,501. Opuntia parryi Engelm. Common Cholla. Petals straw-yellow, obovate. Stamens yellow. Style yellow. Fls. open in full sunshine. Stigmas yellowish.

No. 12,502. Cliff Cactus. Mammillaria tetrancistra Engelm. Petals whitish with broad brown central band. Stamens yellow. Stigmas 4, green. Style whitish.

No. 12,503. Opuntia basilaris Engelm. Rose Cactus. Filaments crimson; anthers white. Style white, pink tinged a little. Stigmas 6, white, each heavily furrowed down the back. Petals rose-purple, cuneate-obovate, truncatish, crenulate at apex,

with a distinct mucro in middle of apex.

No. 12,504. Opuntia echinocarpa Engelm. + Bigel. "Woolly" Cholla. Often 4 to 7 feet high, with a very distinct trunk below and so becoming arborescent. Stigmas green !!, 5, 6, 6, 5, grooved down the back. Inner petals cuneate-obovate, truncate, greenish-white. Stamen filaments green, anthers yellow.

No. 12,505. Agave

"Petals" yellow, arising from a small pale sauce-shaped hypanthium, the six stamens opposite them and set likewise on the margin of the hypanthium. This hypanthium is obscurely glandular-disk-lined. Perianth-segments, above called "petals", grooved in the

middle toward the base, the filament set opposite this groove, and thus forming a somewhat sac-like cavity in back. Stigmas transversely elliptic, grooved lengthwise in middle of back. Anthers versatile, yellow. Filaments greenish-white. Stem 12 ft. h. Mule-track Cañon.

L. concinnus var. pallidus

No. 12,506. Lupinus sparsiflorus Bth. var. arizonicus C. P. Sm. Sandy wash. Banner small, whitish, purplish-margined on sides. wings prominent, rose-purple.
= var. brevior Jepson!

No. 12,507. Oenothera scapoidea T. + G. Stems several from the base, ascending. Cor. white or a slight tinge of cream. Sandy wash.

No. 12,508. Hofmeisteria pluriseta Gray

Dense clumps clinging to the face of vertical rocky walls in Mule-track Cañon.

Wagon Wash near Sentenac
San Diego Co.

No. 12.509.

Ligules pure white, 5-cleft at apex. Styles very long, the stigmatic branches short.

In shelter of brush in wash.

No. 12.510. Salvia apiana Jepson.

Stamens prominent, spreading. Upper lip of corolla very short, recurvous, deflexed over mouth of corolla-tube. Corolla-tube equaled by calyx. Stamens set well out on palate of lip. Corolla lilac Pale and dotted. Cf. 12,511.

Eaton, Apr. 22, 1928, c. 1300 ft.

Eriogonum Palmeri Wats. See no. 12,496. This is very common in the wash at Wagon Wash and on the very low benches by the wash. The new shoots of the season (leafy flowering) are just now pushing and are quite long, but showing no sign of inflorescence yet. They are leafy only below, and simple below, then trichotomous with one fork very short usually, or dichotomous, when dichotomous, mostly above the base of the new shoot. The upper forkings are mostly di-, the lower mostly tri-chotomous. These new shoots, which arise from the woody trunk, are weak and have a prehensile symptom in that they seek support by twining or rather interlacing or interweaving amongst the deadly dry persistent tops of the

Yaqui Well, Colorado Desert, c. 900 ft. Apr. 22, 1928.

San Diego Co.

previous season. "Twining" not a good word, used only in the sense indicated. The dead dry persistent shoots are stiff and hard, though brittle, and have by persistence, tho' senile, this useful function. See p. 201.

No. 12,511. Salvia vaseyi Parish.
Yaqui Well.

Stamens very conspicuous, erect; upper lip of corolla short, erect, though short, much longer than in S. apiana. Corolla-tube much surpassing calyx. Stamens inserted low on borders of palate of lower lip, that is near corolla-tube. Corolla white. cf. 12,510.

No. 12,512. Lepidium lasiocarpum Nutt. Sandy flats

No. 12,513. Chaenactis Carphoclinia Gray. var. attenuata (Gray) M. E. Jones. Sandy flats.

No. 12,514. Notholaena Parry D.L. Eat. (det. R. Tryon, 1957)
This fern grew under rocks in a little cañon opposite Yaqui Well across the wash south.

No. 12,515. Hibiscus denudatus Bth.
Plants about 3 ft. h.
Petals a dull lilac, very dull, with a narrow rose band in center.
Yaqui Well, with 12,514.

No. 12,516. ~~Eschscholtzia minutiflora~~ Aristida glauca (Nees) Walp. (Det. B. Crampton, 1932) Wats.
This grass grew in the little cañon opposite and south of Yaqui Well.

No. 12,517. Horsfordia newberryi Gray.
Plants erect, strictly, 1½ to 3 ft. h. Corolla curious yellow - a buckskin color but bright. Perhaps it is saffron.

Yaqui Well, Colorado
c. 900 ft. *

No. 12,518. Notholaena Parryi D.C. Eat.
(Det. R. Tryon, 1957) This fern grew with no. 12,514.

No. 12,519. Cassia** armata Wats.

Yaqui Well.

No. 12,520. Argythamnia serico-phylla Gray. Yaqui Well. No! = A. serrata Muell. Arg. = Ditaxis serrata Heller

No. 12,521. Porosela Porotthamnus schottii Hel.
(Det. R.C. Barneby, 1967)
Very common in the washes, the only species of this section, and flowering profusely, making wonderful displays. Its leaves are linear and entire, or nearly so.

No. 12,522. Eriogonum thomasii
Washes

No. 12,523. Phacelia crenulata Torr.
No leaves. Washes.

* Rough estimate, as all locs. in desert where there are no contour maps.

** This species is in wonderful flower in the washes below Yaqui Well.

Desert, Apr. 22, 1928.
San Diego Co.

Yaqui Well. There are more Ironwood Trees here than I remember (always scarce) from my previous visit. It is a rather pleasant spot. Altogether there is quite a grove here — i.e. for the desert. We went across the broad San Felipe Creek wash to the south side and into an open canon where we found the best botanizing — nearly half-a-mile from the main wash — in little rocky gulches. Here we got Horsfordia (no. 12,517), p. 215 ante, and other good things.

— Ditaxis californica Kell. — Occasional scattered plants on dry rocky hills.

San Felipe Narrows c. 350 ft. ± 1000 ft.? Apr. 22, 1928

San Diego Co.

We drive down San Felipe Creek and go into camp in the middle of the afternoon near the San Felipe Narrows (see p. 219).

No. 12,524. Brickellia frutescens Gray

No. 12,525. Cryptanthe racemosa (Watz.) Greene S entrance.

No. 12,526. Ayenia californica Jepson.

No. 12,527. Lupinus sparsiflorus Bth. = L. arizonicus (Watz.) Wats. Whole corolla rose-purple except a small whitish flush in center of banner. Var. barbatulus Thomb.

No. 12,528. Lotus tomentellus Greene. Prostrate in the sandy washes. = L. salsuginosus Greene var. brevivexillus Ottley.

No. 12,529. Notholaena Parryi D.C. Eat. (det. R. Tryon, 1937) This fern grew in clefts of the rocks

No. 12,530. Porophyllum gracile Benth. Dense clumps on the rocky cañon walls.

No. 12,531. Fagonia californica Bth. Wash.

No. 12,532. Tyrocarpa coulteri Hook. & Harv. Clumps on rocky cañon walls.

No. 12,533. Hugelia eremica Jepson. = Eriastrum Sandy wash.

No. 12,534. Parosela mollis Hel. Wash.

Cont. from top p. 218. Our camp spot is in a little rincon on the south side of the narrows and sheltered by a tiny ridge. The botanizing here is nothing extra. Cont. top of p. 222.

[Wagon Wash, Apr. 22, 1928
c. 1300 ft. – San Diego Co. –

– The following numbers, 12,537 to 12,539 were collected at Wagon Wash, the other two at Yaqui Well.

No. 12,535. Euphorbia eriantha Bth.
25 pods are marvelously beetle-like. Dry hills at Yaqui Well.

No. 12,536. Galium
Dry hills, Yaqui Well.

No. 12,537. Echinocereus = Cereus engelmannii Parry
Flowers rose-red, common, and now flowering freely. Cactus. c. 1300 ft.

No. 12,538. Simmondsia chinensis (Link) Schneid. c. 1300 ft. Browsed by cattle. Shrubs wonderfully loaded with fruits.

No. 12,539. Castilleia foliolosa H. & A. c. 1300 ft.

San Felipe Narrows, Apr. 23, 1928.
San Diego Co., c. 350 ft.

No. 12,540. Cryptanthe angustifolia (Torr.) Greene.

No. 12,541. Psathyrotes ramosissima (Torr.) Gray

No. 12,542. Parosela emoryi Hel. = C. Palmeri

No. 12,543. Coldenia brevicalyx Wats.

No. 12,544. Astragalus limalus = A. crotalariae (Benth.) Gray
Sheldon. This species is very common on the desert plain about Kane's Springs; for miles and miles there are colonies of it here and there; also along the highway nearly to Oasis. My specimens collected at Kane's Spring.

– The above numbers, 12,540 to 12,543 were collected within 2 or 3 miles of The Narrows. There was good botanizing on the low rolling hills which belong to the mountains about The Narrows. On the flat plain, all the way to Kane Spr., there was little.

San Felipe Narrows, Apr. 23

We break camp this morning, drive down through the Narrows on our way to Harpers Well and Kane Springs. The Borrego Valley country and eastward is dotted over at intervals with the little shacks of settlers. It is very different from 1921, when I was through here last. Not a cabin then.

– Collecting. – Labels should bear County name. It is often extremely valuable to collect at the same locality, not only at a different season, but at the same time in another year. No two seasons are alike, especially in the desert. Separate admixtures, leaving only one thing in a sheet. Thistles are often avoided. Take representative parts, and describe habit of whole plant. Note that the heads are often distorted in drying.

– Last wash near Mecca:

Olneya tesota

Chilopsis saligna in fl.

Mecca to Cottonwood Spring, Riverside Co.
via Shaver Cañon. Apr. 23, 1928.

We take the road to Blythe (from Mecca) and then turn left hand and go up a highly interesting wash. The low hills bordering it are by erosion fortressed and buttressed and very picturesque. The whole scene is very attractive and interesting as a desert scene. The wash is full of flowering shrubs and trees: Chilopsis saligna in quantity; Cercidium torreyanum, in wonderful flowers, and a great deal of it, giving a distinct character to the whole scene: here a tree in the wash facing a granite rock wall, i.e. backed by a vertical wall of rock, a tree so young, so virile, so symmetrical as to attract immediate attention to the delicate beauty of its crown flushed all over with a fresh and sensitive yellow; there an aged tree with irregular crown,

a highly irregular crown such as an artist would warm to its huge drooping masses of yellow. There seems no end to the continuous clusters and single trees here and there of the Palo Verde. The bare Cactus (cf. no. 12,622a) is common; one sees individuals up to 5 and even 7 ft. high. These are the largest and tallest that either I or Peirson have ever seen. Dalea Schottii is in flower, tho' not making so fine a show as in the San Felipe country. There is also Parosela spinosa Hel., the Smoke Bush, but not in flowers. I think I have never seen it in flower. Peirson says he has never found it in flower. I have never even found pods on the bushes. Olneya tesota occurs abundantly in the wash, but it has no flowers, nor have I ever seen flowers on the

tree, nor has Peirson. All the above are found between the mouth of the Cañon and Shavers Well, or a little above. A little above Shavers Well I collect nos. 12,545 to 12,547. See p. 226 - Hyptis emoryi Torr. 5½ m. of Cottonwood Spg.

We continue to drive up the wash by the wagon trail, mile after mile winding amongst the hills in a most beautiful country - beautiful to one who loves the desert; beautiful, strange, ever-changing. Sometimes instead of following in the wash, the trail runs along a low bench by it. In one place we cross the wash to the opposite bench and see fine botanizing in the wash. This point is 2½ miles below Cottonwood Spring. Here we collect the following: see nos. 12,548 to 12,555. This place, the beauty spot in the wash, is road-marked "2.6 miles" from Cottonwood Springs by the old-time direct route, now impassable by work of a flood.

Shavers Well, Colorado Desert. Riverside Co. 500 feet. 23 apr. '28.

No. 12,545. Cercidium floridum =C. Torreyanum Sarg. Shavers Well.

No. 12,546. Eriogonum thomasii Wash, Shavers Well.

No. 12,547. Asclepias subulata Dec. Shavers Well. Great clumps of plants with numerous erect stems 4 to 6 ft. h.

Wash, 2½ mi. blow Cottonwood Spr. see p. 225.

No. 12,548. Nama demissum Gray.

No. 12,549. Eschscholtzia

No. 12,550. Senecio Douglasii DC. var. See p. 232.

No. 12,551. Phacelia campanularia Gray.

No. 12,552. Mentzelia involucrata Watz. A fine species with its large flowers, its large whitish

membranous bracts with herbaceous facicae about the margin. Filaments dilated downward, at apex broadened into a long-armed "boot-jack" structure, the anther on a "pedicel" in the notch. ↑long. Inner stamens short, in a dense rank, all the parts much reduced. Stamens probably 100 to 150. Petals a light-straw-color with satiny sheen.

No. 12,553. Lupinus sparsiflorus Bth. =L. arizonicus (Watz.) Watz. var. barbatulatus Thornber.

No. 12,554. Linanthus aureus Greene. Clear lemon yellow corollas, forming "low mounds" on the sandy floor of the wash; rather rare, but making beautiful spots.

No. 12,555. Brickellia incana Gray Bushes 2½-3 ft. h, thickly, or rather, densely branched, forming rounded masses 3 to 4 ft. broad.

Wash, 2 mi. below Cottonwood Spr., 23 Apr. 1928

1700 ft.

No. 12,556. Gilia stellata Heller ~~inconspicua Dougl.~~ Corolla lilac.
~~= G. sinuata Dougl.~~ !!

No. 12,557. Oenothera refracta Watz.
Petals white.

No. 12,558. Securingea fasciculata = Tetracoccus hallii Bdg.
Gtn. var. hallii Jepson.

♂ fl. Stamens 4, rarely 3. Calyx-lobes uniformly 5, apparently. Flowers from winter buds which now clothe the branches throughout and give a distinctive aspect to these very open angularly branched dark green shrubs. In and along the washes. See p. 238

No. 12,558a. Oenothera refracta Watz. Wash. Pets white.

No. 12,559. Mimulus bigelovii Gray. The very large crimson corollas are produced in profusion. They quite conceal the entire plant body, the stem and branches, from the ground up. Marvelously colorful nosegays, resting in the

Eagle Mts., Riverside Co.

glittering white sand of the washes, they are less of the desert type than most things now flooring in the arid wastes.

No. 12,560. Stanleya pinnata Britt. In protection of thorny Acacia greggii Gray and similar desert thorns. Often 4 to 5 ft. h.

— Cont. from bottom p. 225. We wind around a mountain to the left by the long way around to come around by a sort of circle to the right to reach Cottonwood Spring. This is a beautiful spot in a little hollow, beautiful, quiet, contentful because of its cluster of twelve Cottonwood trees, and the spring which issues from a rocky wall across the flat on the upper side and over which a wash comes down. The spring runs a stream of about one-inch continuously, in a one-inch pike.

↑ 3/4

Cottonwood Spring, Colorado Desert, 23 Apr., 1928

Eagle Mts. * 2400 ft. Riverside Co.

No. 12,561. Buckellia arguta Rob.

No. 12,562. Lepidium fremontii Wats. =B. incana Mort.

No. 12,563. Bernardia myricaefolia Wats. Stamens 8, 7, 6, 6, 6, 6, 6, 6, 6, 6, 4, 7, 7, 6, 4. Rocky cañon.

No. 12.564. Cryptantha pterocarya (Torr.) Greene.

No. 12.565. Ephedra

♂. Anther-sacs 7, in 2 rows on end of flattened or ligulate structure. Rocky slopes and mesas.

No. 12,566. Ephedra

♀. Scales opposite, broadly membranous-margined.

* The altitudes as given for the desert region are rough estimates as to localities in areas not contour-mapped.

- There is a cabin here, occupied by a man and his wife, an old-time prospector named Bell. He says certain of the Cottonwood trees were brought in and planted by a desert man, now living at Hayfields, named Pete Leonard.

There are two kinds of Cottonwood in the cluster: one with rough bark furrowed heavily on the main trunk, brown or dull white, evidently Populus Fremontii; the other with much more erect habit and erect limbs, the trunk bark not so deeply furrowed and showing narrow flat plates superficially, all the main branches and secondary branches smooth, white and shining, like a birch tree. I presume this is Populus Mcdougalii.

Cottonwood Spring, 2400 ft.
Eagle Mts.

- Prosopis juliflora var. glandulosa Ckll.
- Larrea tridentata var. glutinosa Jepson
- Senecio monoensis Greene. This species grows abundantly in the wash below Cottonwood Springs. It forms a round bush, perhaps a little more than a half sphere, the stems numerous, all from the base, all of the same length about, all branched only a little and forming each a distinct unit so to speak. See no. 12,550.
- Condalia lycioides. This forms one of the three or four dominant shrubs on the dry hills, the others being Securingea
Larrea tridentata var. glutinosa
and
There is one individual of the Condalia on the flat by the spring which is huge, 11 ft. h. and 22 ft. broad, and forming a very

dense structure. It is excessively thorny, this species, and I do not now recall a shrub in California more thorny. The sterile shoots sticking out over the plant make a bravely militant show.
- Bebbia juncea
- Chilopsis saligna Don.
- Acacia greggii Gray. Common. It is still utterly winter-naked. The Common Mesquite (Prosopis juliflora) is in young leaf.
- Cercidium torreyanum Sarg.
- Salvia columbariae Bth.

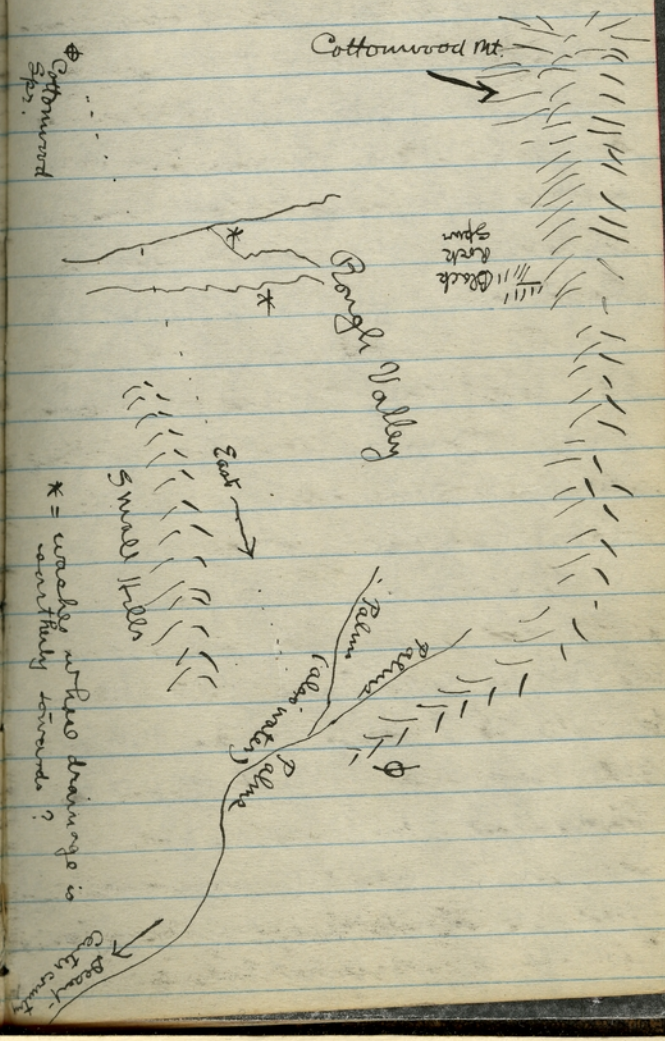
Cont. no. 12,607. Mr. Peirson and I walked down the wash below Cottonwood Spring about 1 mi. today, Apr. 25: the granite-sand floor of the wash, the flowering gardens scattered here and there make an engaging picture. The vertical rocky walls of the wash put a part of the floor in shade as the sun marches westward and no. 12,607 closes up its heads in this way: the rays making a dome over the disk; no. 12,608, closes so as to make a flat disk.

Cottonwood Spr., 2405 ft.
Eagle Mts., Colorado Desert.

— In going due East towards Thousand Palm Cañon one crosses a number of little or big washes all draining out southerly. Not until one comes to an easterly drainage is one in the neighborhood of Palm Cañon.

One should not be fooled by the Black Rock Spur coming down from Cottonwood Mt. The southerly spur which guides one to the cañon is marked ⊖.

The directions above are from the prospector Bell who made three trips before he found the cañon. He calls it "Thousand Palm Cañon" but distinguishes it from the Thousand Palm Cañon of the Edom country below Whitewater. The drainage of Palm Cañon "is out towards Desert Center to Hell and gone."



Cottonwood Spr., Colorado Desert; Eagle Mts.

— Dasoneris arborea Nutt.
Corolla distinctly bilabiate; 2 petals approximate erect, forming an "upper lip"; two other petals forming "lower lip" but diverging. Stamens: 4 spreading to lower side of flower, the other two respectively right and left, the six equally spaced in the semicircle of the lower half of the flower. Petals yellow. Stamens + stipe and pistil set on a disk raised a little above the calyx. Cottonwood Spring. Cf. no. 12,615.

— Pete Leonard and John Brown are the two men who planted, the particular planted Cottonwoods at Cottonwood Spr. Pete Leonard is now at Hayfields.
— Mt. Vernon is the prominent conical peak westerly from Cotton-

2400 ft. Apr. 25, 1928.

wood Spring.

— The day and a half spent here at Cottonwood Spring is very delightful: the clear sunny days, pleasantly cool airs, the shade of the Cottonwoods and the ripple of running water — a sweet sound in a thirsty land. A Golden Oriole is flashing in the Mesquite trees, a blue-black bird with a spot of white on each wing darts here and there; there is the cooing sound of the Inca Dove and the piping call of the Gambel Quail. At dusk a sound new to me: a high continuous whistle as of a Locust or Katydid but not strident. I thought it some member of the Locust family until investigation showed that the sound came from the water pools by the spring: the sound of frogs!

Cottonwood Spr., Colorado Desert, April 25, 1928

Eagle mts. 2400 ft.

This was most surprising to me. The call is long, a little trilling and a little strident; then the note changes and becomes almost flute-like. A more novel experience, as to animals, seldom comes to me now-a-days in California.

– Senecio mohavensis Greene. Cont. from p. 232. Mr. Peirson, my companion, is dissatisfied that, in my Manual, Greene's species is referred to as a variety only.

– Cont. from p. 228, no. 12,558. Also occurs on the dry rocky hillsides. We found it a considerable distance from Cottonwood (spr.) also, on the road to Pinto Basin, but before reaching the summit.

– The birds at Cottonwood Spr., are a joy: Phainopepla, Oriole, Mourning Doves.

– Cercidium torreyanum. The long sterile branches of the tree very thorny.

Riverside Co.

No. 12,567. Phacelia distans Bth. Sandy-loam.

No. 12,568. Baccharis. In the wash-bed below the spring.

No. 12,569. Salix lasiolepis Benth. Bushes in the wash bed above the spring; a small colony 5 to 7 ft. h. No ♀ shrubs could be found; Peirson says it is so elsewhere in localities which he speaks of in cismontane California.

No. 12,570. = Tetracoccus hallii Brdg. Securinega fasciculata var. hallii Jepson. This shrub is common all over the dry hills everywhere for miles around this locality. It has a very remarkable and singular aspect, quite different from all the other desert shrubs hereabout. This singularity is due to its skeleton-like habit combined with its angular branching. Many

Cottonwood Spr., Colorado Desert
Eagle Mts., 2400 ft.

desert shrubs produce a multitude of foliage or flowering branchlets which make a thick weave. Many of these branches die year after year, as the periphery of the shrub moves outward. Encelia is in very different case: it produces none but permanent branchlets each season; these are short but are there to stay. Foliage provision each season, flower provision, is attained by leaf-rosettes produced from winter buds; likewise the flower-clusters; the buds being mixed buds. These winter buds are produced on all the old wood so that the stems and branches throughout, almost from the ground, are rather densely clothed with these leaf-flower rosettes. The singularity of appearance is due to this feature, added

to the almost, or indeed frequently right-angle divarication right-angle divarication, so that branchlets from the arms of a dichotomy will cross and make a rectangle!

No. 12.571. Phacelia campanularia Gray. In the washes. Mt. I dig a plant out of a cleft in the granite wall of the wash! Corolla deep blue.

No. 12.571a. Rhus trilobata Nutt.

No. 12.572. = Descurainia pinnata Sisymbrium pinnatum Greene. This crucifer is common in sandy spots on the flats.

No. 12.573. Lotus rigidus Greene. Most remarkably luxuriant plants 2 to 3 ft. h., bushes, erect or rounded, but not diffuse or spreading.

No. 12.574.

This grass grew in a sandy cirque of the main wash

Cottonwood Spr., Colorado Desert
Eagle Mts. 2400 ft.

bed. It formed very heavy rank stools.

No. 12,575. Viguiera deltoidea Gray ~~Encelia~~ var. Parishii (Greene) Vasey & Rose
This composite makes a somewhat loose shrub or bush on the dry arid rocky slopes.

No. 12,576. Phoradendron californicum Nutt. This parasite formed very heavy masses, sometimes 3 to 7 feet long and nearly as wide, dense, on the shrubs of Acacia greggii.

No. 12,577. Simmondsia ~~californica Nutt.~~ chinensis (Link) C. K. Schneid. A common shrub on the rocky hills.

No. 12,578. Chaenactis stevioides H. & A.
Fls. white. Sandy flats.

No. 12,579. Prunus fasciculata Gray. Sandy washes.

No. 12,580. Cryptantha racemosa (Wats.) Greene. Sandy flats in the washes. This number also: Cryptantha utahensis & both are cited.

Apr. 25, 1928 Riverside Co.

No. 12,581. Psilostrophe
This yellow-flowered Composite is of the dry mesas.

No. 12,582. (Ericameria) Haplopappus cuneatus Gray Peirson regards this as different from the montane shrub of the San Gabriels and San Bernardinos.

No. 12,583. Juniperus californica Carr. det. Vasek 2/6/62 Shrubs 6 to 10 ft. h., often very dense, stocky, many-stemmed.

No. 12,584. Encelia
Dry rocky hills

No. 12,585. Aristida glauca (Nees) Walp. (DET. Beecher Crampton, Mar. 1972)
This grass grows on the most arid rocky slopes.

No. 12,585a. Aristida adscensionis L. (Det. B. Crampton)

No. 12,586. Porophyllum gracile
Driest most rocky hills.

No. 12,587. Encelia (discarded, insect damaged).
Rays very deeply clift-

in this form. with 12.584.

No. 12.588. Franseria dumosa
The driest and most
arid hills.

No. 12.589. Populus
Bark rough, deeply furrowed, brownish white, on the trunk and main branches, dull white or brownish on the outer branches. Trees widely branching, the foliage in large clusters on the crown. Cottonwood Spr.

No. 12.590. Populus
Trunk bark lightly furrowed, light-colored. Branches erect! shining white bark — almost birch-like.
= P. incana Mort.

No. 12.591. Bernardia myricaefolia Wats.

No. 12.592. Eriogonum fasciculatum var. flavoviride Sides of wash below Cottonwood Spr., remarkable for its

glaberous foliage.

No. 12.593. Brandegea bigelovii Coqn.
Not abundant, not common, but an occasional plant in the canon washes or open wash mesas making extensive drapery over some desert shrub. cf. p. 252.

No. 12.594. Stillingia linearifolia Wats. Dry hills.

No. 12.595. Oenothera refracta Wats.
Wash below Cottonwood Spr.; petals white.

No. 12.596. Mimulus Bigelovii Gray, var. cuspidatus Grant. This species makes most marvelous clusters of color in the wash below Cottonwood Spr. The plants vie with each other for our attention and admiration.

No. 12.597. Eriophyllum
with 12.596.

No. 12.598. ~~Oxytheca~~ Chorizanthe thurberi (Gray) Wats. with 12.596.

Cottonwood Spr., Colorado Desert
Eagle Mts. 2400 ft.

Apr. 25, 1928

Riverside Co.

No. 12.599. Eriogonum maculatum with 12.596.

No. 12.600 Gilia ~~not~~ stellata Heller ~~inconspicua Dougl.~~ = ~~G. latiflora Gray.~~ with 12.596.

No. 12.601. Nemacladus

Corolla irregular, two lobes slightly spreading to form one lip, three lobes approximate to form other lip. Corolla lobes rather erect, not widely spreading as in no.* which has a regular corolla and no glandular processes. This 12601 has a few very fine cylindric processes spreading from stamens on the side corresponding to the position of the markedly developed processes in no.* which is strongly bilabiate with yellow spots on ends of cor.-lobes.

No. 12.602. Nemacladus

No. 12.603. Eriogonum nidularium Cov. Sandy washes, and also in a reduced form on the dry hills.

No. 12.604. Antirrhinum filipes Gray. Cor. yellow. Sandy wash Trd.

No. 12.605. Eriogonum pusillum T. & G. with 12.596.

No. 12.606. Mentzelia albicaulis Dougl. with 12.596.

No. 12.607. Monoptilon

Heads with the rays, under shadow at night, closing in such a way as to make a sort of ball or rounded dome over the disk. (Cont. p. 233 ante) with 12.596.

— The following common species grow here: Hymenoclea salsola; Yucca mohavensis; Simmondsia californica; Fouquiera splendens; Salazaria mexicana.

* These nos. were left blank in the field and were to be filled in as soon as the sheets were numbered. On the walk down the Cottonwood Wash (see p. 233 ante), — Cont. p. 204

Cottonwood Spr., Colorado Desert.
Eagle Mts. 2400 ft.

No. 12,608. Monoptilon
with 12,596

No. 12,609. Oenothera brevipes Gray.
with 12,596

Corolla yellow, golden.

No. 12,610. Oenothera scapoidea
T. & G. with 12,596.

Cor. pale yellow.

No. 12,611. Boerhaavia coccinea Mill.
Prostrate on the
granite sand of the wash.

No. 12,612. Lycium cooperi Gray.
Shrubs 5 to 7 ft. h.

Very floriferous. wash.

No. 12,613. Oenothera cardiophylla
Torr. Stems many from the
base, very succulent, forming
a rounded bush-like plant
2 ft. h. On rocky slopes in
sandy spots.

No. 12,614. Condalia lycioides
(Gray) Weberb var. canescens (Gray) Trelease.
Shrubs 4 to 7 ft. h.

commonly. One shrub just below the cabin at Cottonwood Spring, standing near a Mesquite tree, is a most remarkably large individual. It is 12 ft. high and spreads 24 ft., resting on the ground.

No. 12,615. Isomeris arborea Nutt.
Dry hills. See p. 236.

The bushes are now massed with their pendulous pods and the fls. above them.

No. 12,616. Sphaeralcea ambigua
Gray. Dry hills. Corolla a lurid apricot color.

No. 12,617. Aster abatus Blake
Dry hills.

No. 12,618. Franseria dumosa
Dry hills.

No. 12,619. Amsinckia tessellata.
Gray. Sandy flats.

No. 12,620 Malacothrix glabrata.
Rays yellow. Sandy
flats.

Cottonwood Spr., Apr. 25, 1928
Eagle Mts., Colorado Desert. Riverside Co. 2400 ft.

No. 12,621. Salazaria mexicana Torr.
Best developed in the sandy flats

No. 12,622. Porophyllum gracile

No. 12,622a. Opuntia ramosissima Engelm. "Cane Cactus".

No. 12,622 B. Opuntia echinocarpa "Quill Cholla".

— We left Cottonwood Spring in a hurry. Mr. Peirson being anxious to get along. On the gradual rise to the summit-towards Pinto Basin were many fine things but only once did we stop. Rather near the summit was one of these rich flats in the wash where desert shrubs grow to great perfection. I should have liked to stop and study this assemblage for a few moments, but there being nothing "new" we went on. — Cont. p. 252.—

White Tank, Apr. 25, 1928. Mohave Desert.
Pinto Mts. 4500 ft. Riverside Co.

No. 12,623. Coleogyne ramosissima Torr.

No. 12,624. Ericameria nauseosa

No. 12,625. Parosela californica Wats. Spreading bush, low, 3 ft. h. (=P. frenatii Vail var. johnsonii J.).

No. 12,626. Amsonia brevifolia Gray. Cor. whitish - a sort of skimmed-milk white, drying flesh.

No. 12,627. Philibertia hirtella Parish. This is wonderfully luxuriant. A plant quite covers one of the low shrubs of the mesas. One bush is quite enveloped so that I cannot see what it is, the twining columns of Philibertia support numerous clusters of flowers and make a finely developed mass of bloom and foliage. Pinto Basin. See p. 253.

Pinto Basin, Virginia Dale region
mol-ave desert. 2700 ft.
Riverside Co.

- No. 12.628. Euphorbia polycarpa Bth.
Dry mesas, one of the most common small plants in the desert. Pinto Basin.

- No. 12.629. Eriogonum reniforme Torr. & Frem.
Sandy flats.
Pinto Basin.

- No. 12.630. Argythamnia sericophylla Gray. = Pitaxis serrata Heller
Stamen-column: 2 whorls of 5 anthers. Styles of ♀ fl. 6. No! = A. serrata Muell-Arg.

- No. 12.631. Achyronychia cooperi T. & G.

- Cont. from bottom p. 250. Before we reached this particularly choice group of shrubs I saw in the wash a most wonderful Brandegea vine (cf. no. 12593) growing luxuriantly over a shrub and draping it with its greenery. Mr. Peirson saw it, too; he has a perfectly marvelous eye (Cont. p. 253.)

Apr. 25, 1928.

- Philibertia
A distinct saucer-shaped disk with a free edge is set in bottom of corolla, the support or buttress of the hoods being joined laterally to it. See no. 12.627.

- Cont. from bottom p. 252]. for seeing things, even when himself driving the car at 25 to 40 miles an hour. He considers 20 miles very "poky" and slow enough to see anything. As I say he saw the drapery of Brandegea but as he had collected it, he had no further interest. My attitude was just the contrary, of course. Reaching the summit, a broad low pass, flat and valley-wise, we go on and perceive we are going down grade a little and getting into the Pinto Basin, a perfectly [Cont. p. 254]

Twenty-nine Palms, 1980 ft.

Pierson estimate = 2500 ft.

*No. 12,631a. Eleomella obtusifolia Torr. & Frem. Cor. with 2 petals above, the 2 lateral ones spreading right and left; the gynoecial structure spreading downwards through the opening thus formed.

*No. 12,632. Loeflingia refracta Engelm.

*No. 12,633. Oligomeris linifolia Macbr.

– Cont. from bottom p. 253] enormous circular basin, broad and not deep, with marked mountain ranges on every side. Back of Cottonwood is Cottonwood Mountain, and back of that but to the left (as we look easterly) and stretching northerly are the Eagle Mountains. Next come the Coxcomb Mountain with their serrated summits, there

Apr. 26, 1928

Pinto Mts.

lying northeasterly. Northerly are the Virginia Dale Mountains, and northeast in front of us as we travel toward them, the Pinto Mountains, known by the great alternating white and dark-brown or black spots on general ground.

I should have liked to stop a quarter of an hour or so and to study these ranges a bit, but we go rapidly on. I note: Larrea tridentata var. glutinosa Jepson, abundant; Prunus fasciculata Gray, shrub 10 ft. h. rounded clump 22 ft. broad, its divaricate branches and branchlets resulting in a most amazingly close weave on the periphery; Fraxinus dumosa Gray, very common; Parosela spinosa Hel.; Cassia armata Wats.; Hyptis emoryi Torr.; Trixis californica Kell., occasional plants recurring. [Cont. p. 258].

Coyote Holes, w. of Twenty-Nine Palms, Apr. 26. 1928
Mohave Desert

San Bernardino C. * c. 2500 ft.

No. 12,634. Coreopsis californica

Sandy mesa.

No. 12,635. Dysodia cooperi.

Sandy mesa

No. 12,636. Ephedra

2 ft. h. Sandy mesa.

Warren's Well. San Bernardino Co.

No. 12,637. Lupinus andersonii = L. elatus Jtn.
Wats. **

Sandy valley flat

No. 12,638. Tetradymia axillaris A. Nels.

5 ft. h. Sandy valley flat.

** = L. albicaulis Dougl. var. elatus Jepson.

* All altitudes of localities in areas not contour-mapped are rough estimates. ↑ by U. S. Geol. Surv.

Morongo Valley San Bernardino Co.

No. 12,639. Layia glandulosa (Hook.) H. & A.

Rays white. Sandy brushy mesa, in opens.

No. 12,640. Microseris linearifolia

Sandy mesa.

No. 12,641. Condalia parryi Weberb.

Sandy mesa.

— Thamnosa montana Torr. & Frem.

— Gutierrezias abundant here; Peirson thinks the several species no good.

Whitewater Bridge, San Gorgonio Pass.

No. 12,642. Eriogonum thomasii

Sandy wash.

No. 12,643. Hugelia eremica Jepson = Eriastrum

Sandy wash.

L.A. Co. 258

Santa Monica Mts., Apr. 27, '28.

[Cont. p. 269 vol. 47.]

No. 12,644. Ranunculus californicus Bth. Liberty Cañon, Santa Monica Mountains.

No. 12,645. Salvia leucophylla Greene. Conejo Pass, Santa Monica Mountains.

No. 12,646. Diplacus

Conejo Pass, Santa Monica Mts.

[Cont. from bottom p. 255.] Simmondsia californica Nutt.; Opuntia ramosissima Engelm., "Cane Cactus" (cf. no. 12,622a); Isomeris arborea Nutt.; Bebbia juncea Greene; Hymenoclea salsola T. & G.; Salvia columbariae Benth. In addition there were in washes the largest Chilopsis linearis DC. that grows anywhere in Cal. to my knowledge, I think 15 to 25 ft. h., but we were going too fast to make a close estimate. We begin [Cont. p. 259]

Ventura, Apr. 27, 1928. Ventura Co. 259

No. 12,647. Oenothera spiralis Hook. Sandy ocean beach. Stems decumbent. = O. cheiranthifolia Hornem.

No. 12,648. Elymus condensatus Presl. This grass forms very heavy stools in little hollows just back of the sandy ocean beach. It becomes 6 to 8 ft. h.

No. 12,648a. Atriplex

[Cont. from bottom p. 258] to rise up grade a little as we make for an opening in the mountains bounding the Pinto Basin westerly. We go up a cañon and come out in a high plateau-like pass, passing a branch road to White Tank and then reach a north and south road which goes southerly to Piñon Mine and northerly to Twenty-Nine Palms. I went south over this road in 1914. At this [Cont. p. 266 vol. 47.]

Purisima Hills, Santa Barbara Co
Apr. 28, 1928. c. 600 ft.

No. 12,649. Quercus

This leaf type recalls Q. garryana Dougl. a bit; so much so, that that is my motive in taking specimens. The trees are rather fine ones. My specs. are taken from individuals in the County Auto Park of Santa Barbara Co. on the State Highway, e. end of the Purisima Hills. The Park is on La Zaca Creek. c. 600 ft.

No. 12,650. Lotus subpinnatus Lag.

No. 12,651. Trifolium gracilentum T. & G.

No. 12,652. Viola pedunculata T. & G.

No. 12,653. Micropus californicus Fisch. & Mey.

This gnaphaloid plant grew in the open cañon flat.

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